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ABSTRACT

This sixth annual report describes progress achieved by the Federal Government in improving the communication of scientific and technical information to support and enhance national science and technology. Included in the report are details regarding the scientific and technical activities of individual Federal Agencies, such as the Atomic Energy Commission, Departments of Agriculture, Defense, Commerce, Health, Education, and Welfare, Interior, State, Transportation, and the Agency for International Development, National Aeronautics and Space Administration, and the National Science Foundation. The report also deals with operational techniques and systems accomplished during the year of 1968. This report should be of interest to those who wish to get a complete, concise view of how information is handled and disseminated by various Federal Agencies. (BR)

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PROGRESS IN SCIENTIFIC & TECHNICAL COMMUNICATIONS

1968 Annual Report

COSATI 69-5

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Committee on Scientific and Technical Information
of the Federal Council for Science and Technology

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of the Federal Council for Science and Technology

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16. Abstract

This is the sixth annual report of the Committee on Scientific and Technical Information of the Federal Council for Science and Technology covering activities for calendar year 1968. It reflects the continued expansion of scientific and technical information activities within the United States Government, and describes advances made in the communication of such information. Significant achievements of the Federal agencies as well as of the panels and task groups of COSATI are detailed in this report (84 pages).

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L. C. Card 68–60748

PREFACE

This is the sixth annual report of the Committee on Scientific and Technical Information of the Federal Council for Science and Technology. It describes progress achieved by the Federal Government in improving the communication of scientific and technical information to support and enhance a vigorous and expanding national science and technology.

In 1962, the need for a Government-wide organization to cope with the problems of scientific and technical information was recognized by the Federal Council, which formed a permanent working group, then called the Committee on Scientific Information (COSI). Then, as now, the committee was made up of senior Federal officials responsible for operating their agencies' scientific and technical information programs. In February 1964, a new charter for the committee was prepared and approved by the Federal Council, resulting in the change of its name to the Committee on Scientific and Technical Information (COSATI), with a scope enlarged to include technical as well as scientific information activities.

How shall we describe information and communications progress in the year 1968?

It was a year when information operations in Government and the private sector were challenged by economic and budget pressures – page charges, service charges, and criteria of performance. It was a year of increasing interaction between Federal agency information operations and the outside world – professional societies and private industry. It was a year of continuing growth of information systems at all levels in Federal agencies, nationally and internationally. It was a year that saw the completion of an important study of research project-reporting practices and the release of a comprehensive report on scientific and technical data activities.

However, at the year's end, there was still much unfinished business demanding our attention in the year to come. For example, we see the need of a broad-based rationalization of Government information services and national systems, the development of policies for better coordination of operational systems, and a clearer definition of the field of information sciences. We hope, too, for closer linkage between the library and the information communities, fuller exploitation of information analysis centers, sustained analysis of the emerging legal problems of our information world, more productive utilization of information research and development knowledge, and finally solid and continued growth of substantive international information systems which somehow will help stabilize the flight of planet Earth.

This year's report was coordinated by Charles De Vore of the Office of Naval Research, with the active cooperation of the member agencies and panels of COSATI, whose accomplishments and prospects it endeavors to document.

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ANDREW A. AINES
Chairman, COSATI

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page viii - Appendix A entry should read:
"Executive Branch Science Information Structure"

page viii and page 83
Appendix D entry and title should read:
"Federal Council for Science and Technology,
COSATI Panels and Task Groups"

page 81 - Mr. Walter C. Christensen represents the Department of Defense on COSATI

Also, please note that the title of this year's report, "Progress in Scientific and Technical Communications," is a shorter version of the title used for earlier reports in this series, as listed on page iii.

COSATI: AN INTRODUCTION AND A SUMMARY

The Committee on Scientific and Technical Information (COSATI) is one of the committees of the Federal Council for Science and Technology (FCST). Its members and observers, representing twenty-six Federal agencies have a common awareness that nearly all U. S. Government agencies have need for scientific and technical information.

In its monthly meetings, COSATI functions as

a forum for discussion of government-wide problems;

a sounding board;

a medium of news exchange; and

a focus of inter-agency attention on specific aspects of scientific information and communication.

COSATI also oversees the activities of seven panels and four task groups, which study intensively selected aspects of scientific and technical information. Action papers resulting from such study are reviewed by COSATI, and then transmitted to the FCST. FCST approval is followed by appropriate implementation within agencies, or by publication of reports for further study. The Chairman of COSATI and the Executive Secretary of FCST work together closely, within the Office of Science and Technology (OST), to give executive coordination.

In general terms, COSATI is concerned with:

a. the evolving scientific and technical information systems in this country--whether or not under Federal management;

b. the ability of Federal agencies to utilize scientific and technical information effectively and efficiently in carrying out their missions;

c. the development of internationally compatible information systems, leading to maximum interchange of the world's scientific and technical information; and

d. the development and application of information-processing technology.

In 1968, the panels and task groups of COSATI focused their attention on several special problems within that broad scope. Proper employment of computer technology is seen as a necessity for information systems of the future. The Panel on Operational Techniques and Systems sponsored a study on "Selected Mechanized Scientific and Technical Information Systems,"[1] to illustrate the capabilities of operational systems, and to provide guidance to designers of new systems. The report describes thirteen computer-based operational information systems designed primarily for the announcement, storage, retrieval, and secondary distribution of scientific and technical reports.

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[1] Available from the Superintendent of Documents, Washington, D. C. 20402.

The same panel undertook also to introduce a greater degree of uniformity in the format of government reports through the preparation of "Guidelines to Format Standards for Scientific and Technical Reports Prepared by or for the Federal Government."[2] Since this document presents guidelines, rather than a standard, individual agencies can readily add their own requirements in implementing their instructions in-house and to contractors.

The Panel on Information Analysis and Data Centers followed up an earlier action by publishing the "Proceedings of the Forum of Federally Supported Information Analysis Centers."[3] The panel also completed a survey of information analysis centers, with two purposes, first, announcing to the public those services which such centers can provide, and second, obtaining for future panel consideration a definition of the sub-universe with which it is concerned. The survey was published as a "Directory of Federally Supported Information Analysis Centers."[4]

The Panel on Management of Information Activities is studying the cost/benefits of technical information services. A bibliography on this subject has been prepared by the Defense Documentation Center and is available through the Clearinghouse for Federal Scientific and Technical Information.[5] The goal of this effort is better interagency justification of information services under the terms of planning, programming and budgeting system analysis.

Continuing its analysis of information systems and networks, the COSATI Task Group on National Systems for Scientific and Technical Information has had Science Communication, Inc. prepare a "Study of Scientific and Technical Data Activities in the United States." The resulting report has been released for publication.[6] The report presents an extensive listing of active data systems, much valuable collateral information, and many thought-provoking recommendations. COSATI has not endorsed the recommendations or conclusions, but has released the report to stimulate further discussion and analysis of the subject. Members of the Task Group on National Systems for Scientific and Technical Information met for a two-day workshop at Front Royal, Virginia, June 26-27, 1968. Also present were other leaders in government and private information systems. The recommendations of the study on data systems were a chief topic of discussion.

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[2] Available as PB 180 600 from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

[3] Available as PB 177 051 from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

[4] Available as PB 177 050 from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

[5] Available as AD 672 500 from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

[6] Available in three volumes as AD 670 606, AD 670 607 and AD 670 608 from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

COSATI gives immediate attention to information systems within the Federal government, but recognizes that no rigid barrier can exist separating government and non-government systems, such as those maintained by professional scientific and engineering societies, academic institutions, and user-oriented information distributors. Accordingly, cooperative consultation with directors of such non-government information systems takes place regularly. Two factors common to all COSATI planning for information systems of the future are the information-handling capabilities of computer technology, and the tremendous growth in the number and volume of scientific journals. Library systems, information analysis centers, educational resource programs and agency units responsible for technology utilization are parts of the COSATI matrix which are working toward full employment of computer tools in their programs. Obviously, COSATI panels and task groups dealing with such subjects as operational systems, information sciences technology, management of information activities, legal aspects of information systems, and dissemination of information, have direct interest with mechanization of information systems, and the intellectual content of such systems.

The emphasis on the international aspects of scientific and technical information problems increased in 1968. Information about national information programs was exchanged in numerous international meetings. Cooperative international programs now cover a variety of special scientific areas. Accelerating progress is expected in the immediate future.

Details regarding the scientific and technical information activities of individual Federal agencies are included in the following pages. In reading this material, the following quotation from Thomas Huxley may well be considered:

> "I cannot say that I am in the slightest degree impressed by your bigness or your material resources as such. Size is not grandeur, and territory does not make a nation. The great issue...is, what are you going to do with these things?"

COSATI PANELS AND TASK GROUPS

Panel One

Operational Techniques and Systems

Accomplishments

Mechanized Information Systems. In April 1968, the Panel presented to COSATI the publication *Selected Mechanized Scientific and Technical Information Systems.*[7] This 140-page booklet describes 13 currently operational, computer-based systems designed primarily for application in the announcement, storage, retrieval and secondary distribution of scientific and technical reports. Believed to be the most comprehensive publication of its type to date, this booklet is expected to be of value to designers of new systems and also to serve as a reference in university graduate courses in information science and technology.

Microfiche Standards. In April 1968, the Clearinghouse for Federal Scientific and Technical Information (CFSTI) published the third edition of the COSATI Federal Microfiche Standards (PB 167 630-3). The third edition incorporates a revised Section H, concerning security markings, which was approved by COSATI in November 1967.

Report Guidelines. In November 1968, Dr. D. F. Hornig, the Chairman of the Federal Council for Science and Technology (FCST), approved the *Guidelines to Format Standards for Scientific and Technical Reports Prepared By or For the Federal Government*[8] for publication and implementation. The objectives of this publication are to aid the ultimate users of the reports by making them more readable and generally easier to use; to aid the intermediate processor, such as CFSTI, by making it easier to prepare, store, retrieve, reproduce and distribute the reports; to aid the producer of reports by reducing the number of different standards he may be required to follow; and to attain a significant overall reduction in the cost of scientific and technical reports to the Federal Government.

Transfer of Bibliographic Description on Magnetic Tape. The Subpanel on Transfer of Bibliographic Descriptions on Magnetic Tape has completed a draft *Standard for the Transfer of Bibliographic Descriptions on Magnetic Tape of*

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[7] Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.

[8] Available as PB 180 600 from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

Scientific and Technical Reports. The draft *Standard* is based on the United States of America Standards Institute (USASI) *Standard for the Communication of Bibliographic Information in Digital Form,* and is compatible with, though different from, the MARC II standard for monographic materials. Panel One will consider the draft in January or February 1969. If the Panel approves the draft, it will be presented to COSATI for approval in February or March. Upon approval of the Federal Council for Science and Technology (FCST), the Standard may be offered to USASI for consideration as an Annex to the USASI Standard.

COSATI Subject Category List. The Subpanel on Classification and Indexing is conducting a review of the *COSATI Subject Category List.* The objective is to produce a list that will be broad enough in scope to serve the needs of all the COSATI agencies for the categorization of scientific and technical information for announcement purposes and for management systems in research and engineering. The Subpanel has organized the materials proposed for incorporation in the final List, and has begun to assemble its first draft of the List. The Subpanel expects to submit a proposed revision of the *Subject Category List* in 1969.

COSATI Standard Corporate Author List. In 1966, the Panel arranged an agreement between the Department of Defense and the Clearinghouse for Federal Scientific and Technical Information to assume responsibilities as Executive Agents for the preparation and publication of the *COSATI Standard Corporate Author List.* All of the additions and corrections to the entries have been made, and the List is now in machinable form. The program for printing the list will be written soon. The List should be published and placed on sale by the Clearinghouse early in 1969. The Clearinghouse plans to issue quarterly supplements thereafter, with annual accumulations, if there is sufficient demand.

Study of the Actual and Potential Interchange of Bibliographic Information Between Agencies. The purpose of the study is to examine such factors as the nature and volume of the material exchanged, the agencies involved in exchange, requirements for speed, etc., with a view to providing a meaningful dialog when problems, programs, plans for future systems, etc., are being discussed. The group working on this project has prepared and pre-tested a questionnaire for use in acquiring the desired information. The Panel plans to submit a proposal to have the study completed under contract, and has asked the group chairman to develop a Request for Proposal (RFP) for such a contract.

Significant Events

Communications with Related Groups. The Panel has established meaningful communications with several related organizations both in the Federal Government and in the private sector. COSATI established a tie to the National Security Industrial Association (NSIA), and that organization's Technical Information Advisory Committee (TIAC) secured a number of valuable comments from its member companies on the draft *Guidelines to Format Standards* for the Panel. The TIAC has offered to circulate the draft of the revised *COSATI Subject Category List* among its members, and has provided a list of names of individuals who would be competent, and willing, to comment on the revised List. The Micro Media Subpanel has established communications with the General Services Administration (GSA) member of the USASI Committee, PH5, which will develop a USASI Microfiche Standard. The GSA member has expressed willingness to present the COSATI position on the microfiche standard to PH5, and has agreed to keep the Micro Media Subpanel informed on PH5's progress with the standard. The Micro Media Subpanel also has good communications with the National Microfilm Association, and is kept informed of the Association's activities and plans. The Panel has excellent communications with the USASI Committee on Library Work, Documentation, and Related Publishing Practices (Z39) through the Panel Executive Secretary, who is also a member of Committee Z39. A member of the Library of Congress serves as liaison to Panel One, and Library of Congress people participate in the work of the Subpanels and other groups. The draft Standard for the Transfer of Bibliographic Information on Magnetic Tape is an example of the benefits to be accrued from this intergroup communications.

Panel Two

Information Sciences Technology

The COSATI Panel on Information Sciences Technology began a reorientation of its efforts towards support of network planning and national systems design during the latter part of 1967. This was in support of the responsibility of the COSATI community to make the various scientific and technical information services sponsored or conducted by the Federal Government a cohesive and comprehensive reality. The technological areas identified for emphasis were communications technology, network modeling for purposes of load sharing and service distribution, evaluation methodologies, information protection control and accessibility, and document handling. Work began with the isolation of major problem areas which were holding back networking of scientific and technical information services.

It was determined that actual experiments in developing an embryo system using existing resources were preferable to the writing of papers discussing problems and recommending theoretical solutions. Accordingly arrangements were made to experiment with and evaluate the utility of cooperating federal information systems such as the Army's Chemical Information Data System (CIDS) and the MEDLARS System at the National Library of Medicine (NLM). Also, the Panel initiated a project to place on-line in the Washington area its *Inventory of Research and Development Projects in the Information Sciences Sponsored by the Federal Government* for experimentation by appropriate Agencies. It was felt that this effort, which was supported by funds form the National Science Foundation and the National Library of Medicine, could be used as a vehicle for locating existing data bases appropriate for inclusion in a larger network as well as determining the problems certain to arise in the implementation of such a concept. With this experience as a base, recommendations for further action could then be made to COSATI.

During 1968 a multi-file data base was developed which included the second edition of Inventory II, bibliographic citations from the several editions of the *Annual Review of Information Science and Technology* which is supported by the National Science Foundation, bibliographic references to a sample of the holdings of reports in the Technical Information Exchange at the National Bureau of Standards, and a glossary of terms with definitions in the field of information science and technology. Selected portions of this data base were demonstrated to various government organizations.

As the year closed the data base for Inventory III was in an advanced stage of preparation. Arrangements to make it available to participating federal agencies in the Washington area were well advanced, and query strategies had been developed using existing data bases such as MEDLARS.

Panel Three

Education and Training

The Panel on Education and Training (PET) directed its 1968 efforts toward four specific objectives: the implementation of projects designed to create training programs for potential users of information systems; the establishment of a group to investigate in-service training opportunities; the coordination of activities with the Federal Library Committee; the exploration of a Federal Intern program in the field of information science.

The training program was begun with two Office of Education supported projects: (1) American Institute for Research, "Orientation of Educators and Behavioral Scientists to Information Systems," and (2) Herner and Company, "Study of Methods and Materials for Training Scientists and Engineers in the Use of Information Tools, Resources and Facilities." The American Institute for Research project was completed on June 24, 1968, accepted, and is available in microfiche ($.75) or hard copy ($9.35) as ED. 020447 from ERIC Document Reproduction Service, National Cash Register Company, 4936 Fairmont Avenue, Bethesda, Maryland 20014. The Herner and Company effort is awaiting final approval. It is anticipated that both items will be published through commercial channels.

In-service training activities are in the hands of a subcommittee. Preliminary work concentrated about the Systems Development Corporation project, "Research in and Development of On-the-Job Training Courses for Library Personnel," co-sponsored by the U. S. Army and the Office of Education. The project is conducting the research and development necessary to build modular on-the-job training courses for updating the education skills of library personnel. Further, reports of other Government and private projects are brought before PET members as they are discovered.

A PET member, who also serves as a member of the Federal Library Committee's Task Force on Education (TFE), has been appointed as liaison between the two groups. This allows the flow of mutually important data between the TFE and PET. The Federal Intern program is being explored at this level.

Panel Four
International Information Activities

The panel activities focused on the evaluation of the U. S. participation in the numerous international scientific and technical information activities, as well as on examining such internal problems as accessibility of translations, the agencies' use of the so-called PL 480 funds, and the U. S. representation at international planning groups and committees. The emphasis was on monitoring of the progress in the ICSU/UNESCO Feasibility Study, deliberations of the Organization for Economic Cooperation and Development (OECD) Council of Ministers and its policy groups, the work of the ICSU Committee on Data for Science and Technology (CODATA), and the activities of the International Federation of Documentation (FID).

The panel gave considerable attention to the U. S. participation in the International Council of Scientific Unions (ICSU) study on feasibility of the world-wide science information systems which is being viewed as a promising effort toward the creation of future links between major national and international information systems in the natural sciences. The aim of the ICSU/UNESCO study is to foster voluntary cooperation among existing and future services, share tasks and information among services in different disciplines and countries, adopt minimum guidelines for compatibility between systems, and provide access by developing countries to the network as it develops. One panel member serves as a leading member of this study group.

Of equal interest have been the activities of the OECD, whose member countries are responsible for the production of about 75 percent of the world's scientific and technical information. Three panel members have actively participated in the formulation of OECD plans for the interchangeability and compatibility of the major systems in OECD countries.

In the area of domestic activities the panel has initiated two studies; one to consider an improved use of the foreign currency holdings in certain European countries (PL 480 funds), the second to determine the need for federal policies on translations. Both studies are expected to be completed in 1969. The panel has also taken steps to implement its plans for the expansion of its scope of interest and enlargement of its domestic and foreign contacts. It has added to its membership a representative of the Library of Congress to insure appropriate coordination of the executive and congressional information programs abroad. The panel also began a series of the discussions with foreign leaders. Its first invitees were the representatives of the British Ministry of Technology who briefed the panel on the Ministry's technical information objectives and programs.

In sum, the panel continued to serve as an important platform for the review of U. S. positions on major international issues, a focal point for exchange of knowledge about the progress on the international scene, and a voluntary coordination mechanism for the many U. S. technical information activities abroad.

Panel Five
Management of Information Activities

Accomplishments

Special COSATI Inventory of Federal Funds for S&TI. Uniform criteria were developed for taking an inventory of estimated obligations for Scientific and Technical Information Activities by Federal Agencies for Fiscal Year 1968. A special report to COSATI was prepared in June of 1968 utilizing the criteria developed by the Panel.

Planning, Programming and Budgeting System and Cost/Benefits. Under a special assignment by the Panel, the Defense Documentation Center prepared a comprehensive bibliography on *Cost/Benefits of Technical Information Services and Technology transfer.*[9]

Service Charges. A special Task Group of the Panel studied service charges practices of four Federal Agencies (DoD, NASA, AEC and Commerce (CFSTI)) for technical report dissemination. Recommendations were referred to the Panel Working Group on User Charges for consideration in developing over-all Federal policies. As a result of the special Task Group effort, Commerce, DOD and NASA have jointly agreed upon service charge methodology for technical report dissemination, using the existing CFSTI procedures. The Working Group continued exploring ways and means to expand upon the Task Group work to cover additional information products and additional agencies.

Definitions. Five basic definitions were developed and adopted for use by the Panel. These definitions were developed to clarify the Panel's area of concern, and to provide for functional understanding of Scientific and Technical Information, Scientific and Technical Information Media, Scientific Information, and Technical Information.

Plans. During the last four meetings of the Panel, a COSATI Handbook on Model Policies and Procedures has been conceived and planned for preparation during 1969. The Panel objectives in initiating the handbook effort are to promote a desirable degree of uniformity of practices among the Federal Agencies and to provide a practical reference work for use by students, professionals, program managers and directors working in the field of scientific and technical information. The first edition of the handbook will cover philosophy and model policies and procedures in subject areas as follows:

a. Information Transfer.

b. Standards for Scientific and Technical Information.

c. Organization of Scientific and Technical Information Activities.

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[9] Available as AD 672 500 from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

d. Planning, Programming and Budgeting Systems for Scientific and Technical Information Activities.

e. Review and Analysis of Scientific and Technical Information Activities.

f. Research and Development in Scientific and Technical Information.

g. Human Factors in Scientific and Technical Information.

h. Management of Networks for Scientific and Technical Information.

i. Service Charges in Scientific and Technical Information.

In addition to the above effort, the Panel will seek to improve the criteria for special inventories of Federal funds for scientific and technical information activities, to be used in 1970 and subsequent years.

Panel Six

Information Analysis Centers

At the beginning of 1968, the Panel on Information Analysis Centers adopted a general program for the year, consisting of two broad questions, each of which included several sub-questions. The broad questions were:

a. What is the value of an Information Analysis Center; and

b. What is the area of needs and capabilities which the Panel should consider?

During the year, some progress was made in developing answers to each of these questions. A study was formulated and work begun on the problem of evaluating the effectiveness of Information Analysis Centers. The Panel heard presentations of several case histories involving the closing down of specific Information Analysis Centers, and attempted to define the common factors in the case histories.

Relevant to the second question, the Panel completed publication and distribution of a Directory of Federally Supported Information Analysis Centers[10] and the Proceedings of a Forum (held in 1967) on Federally Supported Information Analysis Centers.[11] Members of the panel presented to the group their interpretations of the role of Information Analysis Centers in the national information systems of the future.

In addition, a bibliography for Information Analysis Centers is nearing completion. Sections of the bibliography, assigned to individual panel members, are being edited and organized as a combined text for publication.

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[10] Available as PB 177 050 from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

[11] Available as PB 177 051 from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

Task Group
on
Dissemination of Information

Objective

The basic mission and goal of the Task Group on Dissemination of Information is to study the problems associated with the dissemination of scientific and technical information and offer recommendations for improvement; recommendations that would be useful to the Government as a whole in facilitating and insuring effective dissemination, consistent with the public interest, national security, and other factors which must be considered.

Approach

The Task Group has reviewed the dissemination policies and practices of the federal agencies and departments which generate and disseminate the major portion of the Government's scientific and technical information. This review has brought to light many difficulties and some problem areas relating to dissemination of information. Certain findings have been determined, and tentative recommendations reached.

A small working group of the Task Group is now meeting on a weekly basis to prepare the final report.

Task Group
on
Technology Utilization

The Task Group on Technology Utilization, which began its meetings in early 1968, devoted most of its time to preliminary efforts required to enable the Group to begin the formulation of policies which might be recommended to COSATI and to the Federal Council for Science and Technology (FCST).

The Task Group reviewed existing policies and programs for technology transfer within the Federal Government from both the input and dissemination point of view. The Group also published a preliminary bibliography on the cost/benefits of technology transfer.

The Group expended considerable effort on pinpointing the distinctions between technology transfer and conventional scientific and technical information dissemination.

During 1968 the Group embarked upon a review (which has now been almost completed) of the recommendations in the report of the Subcommittee on Science and Technology of the Senate Select Committee on Small Business entitled, "Prospects for Technology Transfer." At the Group's last meeting of 1968, each of the members agreed to undertake assignments which would enable the Group to work directly, beginning in early 1969, on the task of formulating policies for technology transfer which might be recommended to FCST.

Task Group on National Systems for Scientific and Technical Information

The Task Group on National Systems for Scientific and Technical Information, in conjunction with groups in and out of the government, participates in the planning, development and coordination of information systems which operate at the national and international level. During 1968, the composition of the Task Group was enlarged to include representatives of scientific societies and educational information systems.

The Task Group, including newly designated observer consultants from the American Chemical Society (Dr. Milton Harris) and the American Institute of Physics (Dr. William Koch) met for a two-day workshop, June 26-27, 1968, at Front Royal, Virginia. Also present were other leaders in programs for information systems in Federal agencies, in private organizations, and in the National Academy of Sciences.

In 1968, the Task Group received a three-volume final report from Science Communication, Inc., entitled "Study of Scientific and Technical Data Activities in the United States."[12] The study was begun late in 1966, with the financial support of the Advanced Research Projects Agency, Department of Defense. In order to provide wide distribution of the report, and general consideration of its extensive recommendations, arrangements have been completed for its release as a contractor report.

Efforts continued during the year to exploit the findings of earlier Task Group studies. The "Responsible Agent" concept, under which selected Federal agencies assume responsibility for specialized National Systems of information relevant to their missions, was considered for application in four areas––agriculture, biomedicine, nuclear energy, and space. It is expected that these national systems will be formally established in the next year.

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[12] Available in three volumes as AD 670 606, AD 670 607 and AD 670 608 from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

FEDERAL AGENCIES

Atomic Energy Commission

AEC staff took a leading part in developing a detailed plan for the International Nuclear Information System, which has been recommended for implementation by the International Atomic Energy Agency (IAEA) beginning in 1970. The basic proposal is that each country would survey its own national scientific literature, identify items which fall within the subject scope of the system, and supply bibliographic descriptions, abstracts and subject indexing terms to the IAEA. The IAEA, in turn, would merge the data received and make available (on magnetic tape) copies of a complete file which each member state would be able to use in supplying nuclear information services. The IAEA would also supply a periodical categorized listing of all items reported to the system and, on request, micronegative copies of report literature and abstracts.

The AEC continued its arrangements with Canada, the United Kingdom, Australia, Japan, Sweden, Norway, Finland and Denmark, whereby each of those countries supplies English-language bibliographic citations and abstracts of its significant nuclear literature for use in the AEC semimonthly journal, *Nuclear Science Abstracts.* Formalization of a similar arrangement with the European Atomic Energy Community (Euratom) was discussed. AEC laboratories are also exchanging reports on controlled thermonuclear research with laboratories in the Soviet Union. Soviet reports deemed of special interest to United States programs are translated and distributed by the AEC.

As an economy measure, initial steps were taken to reduce to one per country the number of depository libraries and other institutions abroad receiving free distribution of AEC reports. The recipient institution is being designated by the respective foreign governments.

With AEC support, A Particle Data Center was established at Lawrence Radiation Laboratory, Berkeley, Calif. There are now 27 specialized information and data centers supported wholly or in part by the AEC.

The AEC's semimonthly journal *Nuclear Science Abstracts* abstracted and indexed some 53,000 items of the world's nuclear literature during the year.[13] It is noteworthy that more than half of the items continue to represent literature from countries other than the United States.

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[13] *Nuclear Science Abstracts* is available to the general public on a subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402, as follows: for the 24 regular issues, $42.00 domestic, $52.20 foreign. A single issue costs $1.75 domestic, $2.19 foreign.

Specifications have been established for a system of centralized book procurement and cataloging involving the libraries of AEC and its major contractors. A contractor to operate this system is to be selected soon.

Seven new booklets were added to the AEC's "Understanding the Atom" series, bringing the total to 51. Total distribution since the series was inaugurated in 1962 has passed six million copies. Plans are underway to have some of the booklets printed in braille and recorded for use by schools for the handicapped.

AEC seeks to assist the use, by industry and by State and local governments, of technology developed in its research and development programs. Business-oriented summaries of technological innovations have been issued in cooperation with NASA. In 1968, 72 "AEC-NASA Tech Briefs"[14] were issued. The total number of such summaries now available is 240.

A recent example of an AEC-developed innovation that has been transferred to industry is a phase-sensitive eddy current instrument used for the nondestructive testing of flaws in materials. It has greater sensitivity and is more compact than other instruments available for this purpose. Oak Ridge National Laboratory, which developed the instrument originally for the testing of reactor fuel elements, has assisted in adapting it for use by other Federal agencies. It is now being produced and marketed commercially.

Almost half a million viewers and participants visited AEC overseas presentations during the year. This included a special exhibit in Mexico City in addition to month-long "Atoms-in-Action" Nuclear Science Demonstration Centers in Taipei, Taiwan; Seoul, Korea; Caracas, Venezuela; and Cordoba, Argentina.

AEC demonstrations and exhibits in the United States attracted more than 7 million viewers in 1968. The lecture demonstration program "This Atomic World" was presented during the year to a record 3 million students and their teachers in some 3 thousand secondary schools in 33 states including Hawaii, which was visited for the first time. At the current level, the AEC estimates that it is now halfway to its goal of being able to reach each high school graduate with this presentation at least once during his term in high school.

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[14] Available at 15 cents each from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

DEPARTMENT OF AGRICULTURE

Work is continuing under a 1967 grant by the National Agricultural Library to the Interuniversity Communications Council (EDUCOM) which will result in the development of a long-range plan for an "Agricultural Information Network for Knowledge."

The Library awarded two contracts in June 1968 to collect and analyze data relating to the role played by the National Agricultural Library in collecting and disseminating scientific information. Under one contract, Programming Services Inc. will study the *Bibliography of Agriculture* and its relation to other sources of agricultural information and the needs of the community of users to whom it is directed. The other contract was awarded to the Auerbach Corporation for a study of the technical problems in developing an agricultural data base.

The Library's Pesticide Information Center has expanded its input to include selected abstracts and annotations from periodical literature in its *Pesticides Documentation Bulletin.* The Center now has a data bank which covers all Herbicide Field Tests conducted by Corps Research Division, Agricultural Research Center, Beltsville, Maryland during the years 1951-1967 inclusive. Future testing will be subjected to direct automation from source data. During 1968 the Center issued a major bibliography on "Toxicity of Herbicides" and aided in preparation of the Federal Committee on Pest Control publication entitled "Catalog of Federal Pesticide Monitoring Activities in Effect July 1967."

The Library participated in the development of standards which have been adopted by the Directors of the three National Libraries. These standards, which were developed by the National Libraries Task Force on Automation and Other Cooperative Services, provide a tape format for the exchange of bibliographic information (MARC II) for compatible cataloging, and for a uniform method for representing dates.

A supplement to the Library's Agricultural/Biological Vocabulary, which expands the authorized list of terms for use in USDA information storage and retrieval systems, was published.

The Economic Research Service (ERS) is cooperating with the Current Research Information System (CRIS) in making plans for computer retrieval from 1968 Annual Progress Reports of current and recently completed agricultural economics research publications at both the State and Federal levels. ERS is also collaborating with the National Agricultural Library and the American Agricultural Economics Association in making preliminary plans for an Agricultural Economics Documentation Center within the Library. Compilation of a bibliography on agricultural economics is under consideration as part of these plans.

The Forest Service (FS) has developed an information search and retrieval system for operation at Forest Service Research Stations. The system consists of 11 independent but mutually compatible programs. These programs form a system called FAMULUS that is especially designed for the automation of personal information files for scientists.

The Soil Conservation Service has initiated work on the following three national data banks: (1) soil morphology; (2) rangeland resource data, and (3) tree growth and wood production according to kinds of soil.

Seven Agricultural Research Service divisions have installed or plan to install magnetic tape typewriters, while three divisions are using electronic devices for the storage and retrieval of information on pesticides.

DEPARTMENT OF COMMERCE

The Bureau of the Census

The Bureau of the Census conducted three week-long seminars on "Federal Statistics for Local Government Use" in Washington, D. C., for city planning and statistical officials, on December 4-8, 1967, May 13-17, 1968, October 7-11, 1968. The Office of Statistical Standards, Bureau of the Budget, shared in the development of seminar plans. In May 1968, the Bureau conducted a workshop in Madison, Wisconsin, to develop plans for local use of computer summary tapes from the 1970 censuses of population and housing.

The *Directory of Federal Statistics for States,* released in 1968, provides users of social and economic data with comprehensive guide to statistics published by agencies of the Federal Government for individual States. The *Directory* presents a relatively detailed summary of types of statistical information to be found in more than 700 publications, including serials and periodicals, census and survey reports, news releases, and special reports issued by Federal agencies. It is a companion to the *Directory of Federal Statistics for Local Areas* issued in 1966. Work is underway on a *Directory of Non-Federal Sources of Statistics for States and Local Areas.*

Two quite different serial publications begun in 1968 are products of a program of research documentation undertaken in 1963 as part of the Government-wide program for dissemination of technical information: A new publication series, *Technical Notes,* was initiated to accompany the Bureau's established series of *Technical Papers and Working Papers* for methodological and research reports.

To inform users of the content and general arrangement of data in its reports on U. S. imports and exports, the Bureau issued a new guide to the various sources containing foreign trade statistics for 1968.

Effective with the July 1968 statistics, a monthly computerized custom-tailored service for users of U. S. foreign trade data was initiated on a cost basis. The new service is designed to satisfy the needs of users who are primarily interested in obtaining statistics for their own selection of commodity groups and subgroups from the import and export classifications.

In 1968 the Bureau published coding manuals for the 1967 Censuses of Manufacturers. The first, "Numerical List of Manufactured Products," arrays products and services of the manufacturing industries in the United States for which data were collected in the 1967 census within their respective product classes, within industries, and with industry groups.

Economic Development Administration

The Economic Development Administration (EDA) has developed a Comprehensive Information System and Data Base (CIS&DB). Conceptually, the system's ultimate design incorporates all elements required to support the Agency's total information needs. It will include a computer facility with direct access to one-half billion characters of data, automatic retrieval devices, and a library of books and documentation.

The data contained in CIS&DB are predominantly socio-economic although administrative and organizational details are included. The current format and others are being added as quickly as possible.

1. 1952, 1962, and 1967 County and City Data Books.
2. Subsets of 1949, 1954, 1959, and 1964 Censuses of Agriculture.
3. 1960 Census of Population, Socio-Economic Characteristics.
4. 1964 County Business Patterns.
5. EDA Project Data.
6. 1961-1967 F. W. Dodge Construction Data.
7. Bureau of Employment Security (BES) Unemployment Data.

EDA's intent is to enlarge the data base on an "as needed" basis. Existing files will be expanded and organized wherever possible by geography. For example, the County Business Patterns file will be expanded to cover summary data beginning in 1962, through 1966 and projected through 1975. While the system remains in the tape mode, it is rather expensive to run multiple reels of tape to support requests. Regional and State files and subject-oriented subsets satisfy a large number of requests and are now being prepared as an interim solution. Files contributed by other agencies have been accepted and are an integral part of the system. Other agency participants have been granted access to all elements of the system.

By the end of fiscal year 1969, it is anticipated that more than 500 million characters will be in the data base, that statistical and planning documents required by EDA management will be produced automatically and that more sophisticated analytical and mathematical applications will be developed for high priority operations.

EDA hopes to make its systems and appropriate subsets of data available to Regional commissions, development districts, interested universities, and other appropriate public bodies upon request. This ability to provide economic, socio-logical and socio-political data to all levels of government engaged in economic development programs would reduce the cost and improve the quality of these efforts. The total CIS&DB will permit high-level planning support for the political (county or EDA Area) and quasi-political (District or Regional) jurisdictions which currently cannot afford to utilize electronic data processing equipment.

Environmental Science Services Administration

As in previous years Environmental Science Services Administration (ESSA) continued to devote its major effort to the collection, transmission, processing, storage, retrieval, analysis, and dissemination of raw, semi-processed and processed physical environmental data, and of predictions. Much of this material (e.g., weather data and predictions) is handled on a real-time basis in an international as well as national framework. The extension of this framework to embrace scientific and technical information (STI) from research studies and technical investigations received added emphasis.

Bibliographic citations, charts, and primary and secondary scientific and technical publications are now compiled and distributed as part of an integrated ESSA information system. Recently the efforts of the Scientific Information and Documentation Division (since mid-1966 the focal point for ESSA's STI activities) have been directed toward developing systems which would make use of current hardware and software, networks, and experience to put primary and secondary information gathering, processing and dissemination on a basis more immediately responsive to the actual needs of scientists and the general public.

By way of specifically implementing those portions of the "Perreault Report" (which outlined an intellectual basis for developing an ESSA-wide scientific or technical information system) that would be feasible with limited funds and personnel, the administrative actions were taken to:

(1) provide electronic tape-typewriters for each library and for the editorial (publications) operations;

(2) a converter to allow computer (magnetic tape) input from paper tape;

(3) a consolidated sample shelf-list or "book catalog" of all the holdings in *Oceanography* and marine meteorology in the three ESSA libraries, to work out the data processing problems of a total book catalog or inventory for ESSA libraries, and to provide usable indexes for the several libraries, including the new Oceanographic laboratories' libraries at Miami and Seattle;

(4) development of an international vocabulary and classification schedule for Environmental Sciences in machineable form for use by all ESSA libraries and publications for subject identification;

(5) development of an automated ESSA-wide system for Publications Announcement, Library Accessions list and bibliographies with indexes;

(6) development of a machineable system for storage and retrieval of abstracts of Research in Progress Reports (ESSA 12-2);

(7) steps to effect consolidated procurement and cataloging of library materials at two major libraries in the D. C. area.

All of the above are aimed at an integrated storage, retrieval, announcement and publication system which might eventually become linked by high speed computers and communications lines, with terminals or consoles for real-time access at all major laboratories and libraries.

National Bureau of Standards

The Computer-Assisted Printing Section, which the Bureau estabished in 1967, has become a productive part of the NBS redactory and publication process leading toward efficient use of both the Linofilm and the Linotron phototypesetting machines at the Government Printing Office. A number of general-purpose computer programs have been written in collaboration with the staff of the Data Systems Design Group of the NBS Office of Standard Reference Data. These programs have been applied in the production of over a dozen books, monographs, *Technical Notes,* and conference proceedings. Tapes will be modified during the coming year so as to be suitable for computer searching.

In the field of oral communication, NBS continued to expand its conference program in 1968. National and international experts in the physical sciences and various branches of technology were invited to participate in 30 major conferences at the Bureau.

The NBS Center for Computer Sciences and Technology operates a specialized information center for the computer sciences and technology known as the Technical Information Exchange. Since its inception in May 1966, the Exchange has established a mechanized file of project resumes containing management and technical information on Government-sponsored activities in the field and has made significant progress in the development of an operational system for storing and retrieving information on the formal literature, i.e., books, proceedings, reports, theses, serials, periodicals, etc.

Clearinghouse for Federal Scientific and Technical Information

Changes in the format of *U. S. Government Research and Development Reports* and index were made to improve presentation and readability. *USGRDR* is now sent to DOD contractors in lieu of the formerly published unclassified unlimited *Technical Abstract Bulletin (TAB).*

The publication *Technical Translations* was terminated with the December 30, 1967 issue. Government-sponsored technical translations are now announced in the *USGRDR.*

On July 1, 1968, the Defense Documentation Center (DDC) implemented a new Department of Defense (DOD) policy under which DDC users requesting paper copies of DOD technical reports from DDC are subject to a charge for such service. All orders for paper copies are sent to the Clearinghouse.

The Clearinghouse, in cooperation with DDC, published a cumulative index to *U. S. Government Research and Development Reports Index (USGRDR-Index).* The cumulative index consists of three quarterly and one annual issue.

Clearinghouse Announcements in Science and Technology (CAST). A new announcement service started in August 1968 which announces research and development reports and Government-sponsored translation in 46 separate categories of technology resulting from research in defense, space, nuclear energy, transportation, area development, education and other national programs.

The Clearinghouse continued to expand its coverage in acquiring technical information from Federal agencies and from private organizations. Documents were received from the Department of Transportation and the British Road Research Laboratories on highway safety research; from the Department of Housing and Urban Development on urban transportation; from the Office of Economic Opportunity on research in the social sciences and summaries of Federal programs for FY 1967 for each state. In the private sector reports on area development planning from the American Institute of Planners and the Metropolitan Council of Governments; from the Federal Communications Commission magnetic tapes on radio station licencee data; from the Federal Aviation Agency aircraft accident reports and briefs of accidents in the field of U. S. Civil Aviation accidents.

The Clearinghouse, together with the Water Resources Scientific Information Center (WRSIC) of the Department of the Interior, developed a new announcement product, Selected Water Resources Abstracts.

As a result of an agreement with the National Institute of Neurological Diseases and Blindness the Clearinghouse will, in the near future, prepare and distribute a journal entitled *Neurological Research.* The new journal will provide information to the scientific community on the total neurological research program supported by the Institute.

National Standard Reference Data System

Since the latter part of 1963, the National Bureau of Standards Office of Standard Reference Data has administered the National Standard Reference Data System with the general objective of providing for the technical community of the United States optimum access to critically evaluated quantitative data on the chemical and physical properties of substances and their interactions. During 1968, data compilation activities continued in six technical areas: nuclear properties, atomic and molecular properties, solid state properties, thermodynamic and transport properties, chemical kinetics, and colloid and surface properties. Significant compilations of data in each of these categories were published during the year. (A total of 14 compilations for 1968). The National Standard Reference Data System was given important additional support and new authority with the signing of the Standard Reference Data Act, PL 90-396, on July 11, 1968. In addition to providing general Congressional endorsement for the program, the Act authorizes the Secretary of Commerce to sell compilations of standard reference data and to use the income to support some of the activities of the System. The Act also authorizes the Secretary to obtain copyright in products of the Standard Reference Data System, with the understanding that copyright protection will lead to improved distribution of Standard Reference Data and permit additional monetary return to the Government.

International interest in data compilation has been stimulated by the establishment and productivity of the National Standard Reference Data System. In 1966, the International Council of Scientific Unions created a Committee on Data for Science and Technology (CODATA) which has worked actively to promote international cooperation, to provide a channel of communication among projects in various countries, and to encourage scientists to undertake data compilation projects.

While major emphasis has been placed on data compilation projects, the Office of Standard Reference Data has also undertaken research and development on problems of handling data using modern techniques for printing and publishing, on communications and contacts between data centers, and on the technology required to make a data storehouse most available to users. Cooperation has continued with data projects in other government agencies, with the Office of State Technical Services, and with related activities sponsored by professional societies and private industry.

Patent Office

ICIREPAT Shared-Use Programs. Participation in international patent information retrieval under the Committee for International Cooperation in Information Retrieval Among Examining Patent Offices (ICIREPAT) program continues at a somewhat increased intensity. Information retrieval systems in the fields of Lubricants, Analog-Digital Converters, Lasers-Masers and Layered Products are in the production indexing stage, joining in this development stage earlier systems in Alloys and Steroids.

Microfilm Developments. Microfilming of the numerical file of 3.5 million U. S. patents was completed. Construction of a master numerical file of patents in 8-up image format aperture cards was started. These cards will be used to make a subject arranged master file from which dissemination sets will be prepared. Continued effort was given through ICIREPAT and national patent offices to gain further acceptance of the 8-up aperture card as the uniform international patent exchange microform.

Patent Full Text Data Base System. Plans were formulated to build a data base comprising the full text of current patents and related documentation. This base would provide data in the form needed for valid developmental work in information retrieval and generate the library later needed for effective operational full-text searching. It would, in addition, (1) provide the context for receiving patent applications in machine language (as recommended by the President's Commission on the Patent System); (2) afford a source for direct machine language transmission of patent information to the public; (3) support more effective and economical internal operations; and (4) provide by-product magnetic tapes which could be used to compose and prepare printing plates on the GPO Linotron. The data base system is in the design stage. It is expected that by the end of fiscal 1969 an annual input rate of 30,000 applications will be achieved. Initial keyboarding will be done under contract. Plans call for building in-house capability for the total data base preparation by the end of FY 1971.

Office of State Technical Services

The Office of State Technical Services awarded matching grants to 46 States during fiscal year 1968 in support of technical services programs designed to accomplish the more effective application of scientific and engineering information throughout business, commerce, and industry. The State Technical Services Act of 1965 (PL 89-182) authorizes activities which include preparing and disseminating technical reports, abstracts, computer tapes, microfilm, reviews, and similar scientific or engineering information, including the establishment of State or interstate technical information centers; providing reference services to identify sources of engineering and other expertise; and sponsoring industrial workshops, seminars, training programs, extension courses, demonstrations, and field visits.

The amount granted to these States totaled $4.45 million and nearly 26 percent ($1.15 million) was for technical information dissemination services. In addition, 28 percent of the grant funds ($1.26 million) was approved for support of conferences and seminars. The remaining grant funds were used primarily by the States for field services and reference services.

Thirty-five of the 46 States now participating in the State Technical Services Program are providing technical information dissemination services to industry and at least 90 specific projects are included. These projects range from a slightly expanded or modified effort within an existing State or university technical library to the establishment of a totally new service designed and used expressly for the State Technical Services Program. The objective of these information dissemination services has been to provide industry with convenient and responsive access to the technical information resources of the university, the State and the Nation. In many cases, technical personnel are provided to assist the businessman in finding he appropriate information needed to answer specific questions.

Examples of such information centers are:

Technical Information Center, Linda Hall University
Kansas City, Missouri

PENNTAP Information Center, Franklin Institute of Technology
Philadelphia, Pennsylvania

Technical Information Center, North Carolina State University
Raleigh, North Carolina

Technical Information Center, Southern Methodist University
Dallas, Texas

Technical Information Service, University of Minnesota
Minneapolis, Minnesota

Typical services provided include answers to specific reference questions, retrospective literature searches, continuing current-awareness searches, preparation of abstracts, and translations. The cost varies depending upon the nature of the service rendered and the particular institution providing the service. The number of specific inquiries continues to increase significantly each year according to annual reports filed by the States.

Each year more and more States are becoming convinced that field services, or person-to-person contact, provides the most effective means for technology transfer. In this regard, the information dissemination centers, and reference service programs will be increasingly used as a primary resource by the field services engineers in providing technical assistance to industry.

DEPARTMENT OF DEFENSE

Defense Documentation Center

Automatic Services. In 1968 DDC continued its testing of a new program to provide automatic services and products to DDC users in the form of a comprehensive service package which would furnish: (1) special bulletins announcing newly acquired technical reports of interest to individual user groups; (2) complete sets of indexes (corporate author, subject, etc.) for each of the profile-based announcement bulletins; (3) microfiche copies of reports, again according to user-selected subject profiles; (4) magnetic tapes of announcement information by subject profile; and (5) special automatic bibliographies by user subject interest. These service elements were optional; each test participant decided which ones his activity needed. Testing will continue during 1969 and, depending on the results, broad application of the program may follow.

On-Line Experimentation. In 1968 DDC experimented with the concept of on-line, real-time access to DDC data banks from remote terminals. In-house experimentation, using a prototype cathode ray tube on-line to a UNIVAC 1107 computer, resulted in a successful demonstration of system capability. Finalized and approved plans called for progressive expansion during succeeding years to a network of on-line terminals at key locations within the Department of Defense, utilizing the UNIVAC 1108 computer installed in September 1968.

Increased Use of Microfiche. A major step toward improved and more economical service was the emphasis placed upon providing technical reports in the form of microfiche. In 1968 about 500,000 requests for technical reports were expected to be filled in this form, and 748,000 distributed automatically according to users' technical "profiles."

Increased user-interest had a counterpart in the equipment industry: a number of practical approaches toward advancing the use of microfiche were developed by concerns previously reluctant to undertake equipment development and production on any large scale.

DDC efforts during the year preceded, but were clearly in consonance with, a GAO recommendation to the Secretary of Defense that the use of microfiche be encouraged in every way possible. Intensified efforts scheduled for 1969 were expected to further increase microfiche usage by a substantial amount. At year's end, however, it appeared that the ultimate degree of use depends upon particular needs of individual users and availability of economical and effective equipment for viewing; handling, and making full-size copies as needed.

New Service to Contractors. As of 1 July 1968 U. S. Government contractors and grantees were allowed access to the Research and Technology Work Unit Information System. The specific data categories made available are limited to those needed for contractor awareness of the current needs and progress of DOD research and technology programs.

Department of the Army

Progress made in improving the availability of scientific and technical information under the auspices of the U. S. Army Scientific and Technical Information Program is described in detail in the U. S. Army Research and Development Information Program FY 1968-FY 1972 report, June 1968, AD 672 844.

Specific Army advances in information handling have been made in improving efficiency of data operations, improving data classification systems, in information standardization, and in technical and management information systems.

The design and concurrent operation of the computer-based Army Research and Development Information (ARDIS) continues. Four subsystems, (1) Ongoing Scientific and Technical Work, (2) Interest Profile Inventory of Army Scientists and Engineers, (3) Inventory of Army Scientific and Technical Information, and (4) Army R&D Financial Management, are operational. The subsystem of R&D Requirements for Work has been successfully tested and has a limited operational capability to relate R&D requirements to ongoing R&D efforts. A directory of Army Scientific and Technical Information Holdings and Services is being published, and a Guide to Laws and Regulations on Federal Libraries has been published in cooperation with the Library of Congress.

In the area of chemical information, an operational automated file of 128,000 chemical compounds for drug screening has been established and an experimental general chemical compound file of 260,000 compounds for batch processing and 25,000 compounds for on-line real-time processing has been established. A chemical communication system has been established between the Army's Edgewood Arsenal and the data bank at the University of Pennsylvania, employing teletype data-phone equipment as input to the computer and data-phone chemical line printer equipment as output. Additional terminals for querying the Chemical Data Bank are about to be tested.

In the area of engineering information, a system is under development which achieves compatibility among existing engineering data systems, and allows the engineer to obtain data on a medium of his choice. The system accepts data on various media, stores it on 16mm roll film, and outputs it on various media. The value and use of the system to Army installations for exchanging engineering data will be tested.

In the area of improving data exchange in all disciplines, the Information and Data Exchange Experimental Activity (IDEEA) is continuing. The hardware phase of the project is nearing completion. The experimental phase of the project will provide for the measurement and analysis of experimental operations in data exchange to include usage patterns, data rates and volumes, error analysis, traffic patterns, and response relevance. Chemical data will be exchanged initially. Engineering and/or management data will be exchanged later.

Department of the Navy

A major management milestone was reached with the issuance of a directive by the Secretary of the Navy (SECNAV Notice 5200 of 16 July 1968) to promulgate the concept of the Department of the Navy Management Information and Control System (DONMICS). By providing a framework for over-all systems integration, this concept is at once a goal and a guide for improving information flow across the whole spectrum of Department management.

The tasks involved––strengthening the discipline for systems planning and development, developing automatic data processing standards, improving data processing resource management––will be long and difficult but certainly rewarding. In the 1970's, a Department-wide network ultimately will emerge and tie together all the information systems into a logical and sound operation to serve the entire Department of the Navy.

Details of the program are included in *Navy Management Review* for September 1968, for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

The *Thesaurus of Engineering and Scientific Terms* (TEST), prepared for the Department of Defense by the Office of Naval Research under Project LEX, was published and is available to the general public through the Engineers Joint Council, 345 East 46 St., New York, N. Y., 10017. Hard cover editions are priced at $25; flexible cover editions, at $19.50. A magnetic tape version is also available from the EJC. Project LEX was a cooperative effort of government agencies and industry, including the EJC. The Defense Documentation Center (DDC) has the responsibility for the maintenance, periodic revision, and updating of TEST, designed as an interdisciplinary vocabulary of scientific and technical terms suitable for use throughout the Department of Defense.

During the year, the Navy Research and Development Information Center (NARDIC) was established as a staff office under the Deputy Chief of Naval Material for Development. Its responsibilities include serving as a focal point within the Department of the Navy for research and development planning information disseminated to industry and evaluating industry's use of the information provided in order to recommend further means of improving technical communications between the Navy and industry.

A review of the Navy's Technical Information Program (NATIP) was initiated in 1968, with the objective of centralizing all aspects of technical information in a single office, under a Director for Navy Technical Information, who would have over-all coordination responsibility. Implementation of the recommendations resulting from the review is expected during 1969.

The initial series of one-week training courses initiated in 1967 by the Council of Librarians, East Coast Naval Laboratories, for library technicians within the Department of the Navy proved so successful that the courses have been rescheduled for 1968-1969. The courses cover "Descriptive Cataloging for Technical Libraries," "Reference and Circulation in Technical Libraries," and "Procurement of Library Materials for Technical Libraries." Evaluations from last year's trainees indicate that the series of training sessions fills an important need within the Navy technical library community, especially since formal training of this specialized nature is not offered elsewhere.

Department of the Air Force

Progress. The Scientific and Technical Information Program is becoming more widely recognized as an overall service function performed in support of research and development in the Air Force.

In order to make the Air Force program more easily administered and to provide greater visibility, the basic regulation (AFR 80-29) has been divided into six separate regulations. The first two of these regulations, the Air Force Scientific and Technical Information Program and Information Analysis Centers, are presently in the coordination stage at the Air Staff level. The basic library regulation (AFR 212-1) has been rewritten to clarify the role of the technical library in the technical information program. It also provides standards for the technical libraries.

The Reliability Analysis Center, operated by IIT Research Institute, Chicago, Ill., under the sponsorship of the Rome Air Development Center, Air Force Systems Command, joined the group of officially designated Department of Defense Information Analysis Centers on 1 July 1968. Its mission is to serve as the central DOD activity for the collection, storage, reduction, organization, review assessment, analysis and dissemination of information and experience data on the reliability of microelectronic devices.

The Air Force Machinability Data Center (AFMDC) operated by Metcut Research Associated, Inc., and sponsored by the Air Force Materials Laboratory, Air Force Systems Command, has also been designated an official DOD Information Analysis Center. AFMDC collects, evaluates, stores and disseminates material removal information for the benefit of industry and government. Primary emphasis is placed on providing engineering evaluation for the purpose of developing optimal parameters in material removal.

The Air Force research and development program in information sciences has been largely concentrated in the areas of linguistics, logical processes, network and switching theory, language and machine translation and communication theory.

The Office of Aerospace Research and the Clearinghouse for Federal Scientific and Technical Information conducted an experiment to test the feasibility of a current awareness method. Of the 1300 individual participants in the test, about 950 were Air Force people, about 50 were assigned to the National Bureau of Standards and the remaining 300 were businessmen sponsored by the Wisconsin State Technical Services organization. The test proved to be highly successful. The Clearinghouse has adopted the method and has made it a part of their regular commercial service under the title *Clearinghouse Announcements in Science and Technology* (CAST).

Both the Air Force Systems Command (AFSC) and the Office of Aerospace Research have begun active efforts to make effective use of the increasingly available time-sharing computer technology in support of information requirements. The AFSC effort is directed toward rapid presentation of management and fiscal information to top management. The OAR effort is directed toward providing the individual with means to interact directly with his own data base. Both approaches appear to bear the potential for future high pay-off.

The Technological Barriers Documentation Project sponsored by the Office of Aerospace Research is directed toward improved technical information flow through more definitive identification and improved understanding of man-to-man transfer mechanisms. A better coupling methodology is the goal. The project has progressed to the point where active testing on a significant scale is required. Such testing is scheduled to be accomplished during 1969.

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Office of Education

During FY 1968 the Educational Resources Information Center (ERIC) program made significant gains in disseminating information in four distinct ways: (1) cataloging, indexing and announcing significant educational research and research-related reports and making these reports easily and inexpensively available; (2) interpreting and summarizing information on critical topics for use by practitioners and administrators; (3) strengthening existing dissemination channels in education; (4) providing a base for developing a national information network. Following is a summary of these accomplishments in 1968.

ERIC Clearinghouses. In 1967 there were 13 clearinghouses. In 1968 the system had expanded to 18 clearinghouses.

Cataloging, Indexing, Announcing. Increased activity in document processing is shown by the following indicators:

	1967	1968	Increase
Documents added to the ERIC Collection	3550	8800	250%
Subscription to *Research in Education*	2660	4550	175%
Sales of ERIC Documents			
Microfiche (cards)	800,000	2,400,000	300%
Hard (paper) copy (titles)	4,000	9,000	225%

Interpreting and *Summarizing.* During 1968 the ERIC clearinghouses produced and distributed 12 newsletters at various intervals to over 55,000 key educators and researchers. The number of bibliographies and interpretive summaries prepared by clearinghouse rose from 40 in FY 1967 to over 250 in FY 1968. These specialized clearinghouse products are distributed first to a limited number of specialists in the field and then are announced in *Research in Education* and are made available through the ERIC Document Reproduction Service.

Strengthening Existing Communication Channels. During 1968, ERIC clearinghouses prepared special ERIC columns that appeared in 21 professional journals which reached nearly 300,000 educators monthly or quarterly. The clearinghouses also performed a variety of consultative services, including giving assistance to national organizations in preparing proceedings for national conferences; providing on-site use of document collections at clearinghouses for visiting scholars; providing direct services in support of OE-supported educational and training programs; providing consultative services to State and local agencies in development of information centers; and conducting reference services upon demand.

National Information Network. All of the foregoing activities of ERIC are viewed as building the base for development of a national educational information network. ERIC can provide central documentation and some information analysis services. Local and State educational information centers, however, are needed to provide services to the nation's millions of educators. Therefore, ERIC staff began a set of programs in 1968 to foster development of local and State information centers. These programs include interpretation of the ERIC program and stimulation of programs for training educators to use ERIC services, dissemination of tutorial literature on how to use ERIC, development of reference and operational manuals for use by staff of State and local information centers, and implementation of a project that will permit information centers to interrogate ERIC files from remote terminals.

The National Institutes of Health

Concentrating on those means of communication that place in the hands of the scientist information pertient to work being accomplished in his area of interest, the National Institutes of Health (NIH) utilizes a varied and multidimensional approach to scientific and technical information through activities ranging from such tried and proven methods as publications and conferences to the new technologies exemplified by the computer. The year 1968 saw more emphasis placed on improvement of ongoing activities at NIH than on the implementation of innovative techniques in the communication of scientific and technical information. The following material highlights those few instances of new endeavors and also includes aspects of development in previous activities.

In order to overcome time lags in maintaining current awareness in areas where research developments are moving rapidly, the National Institute of Allergy and Infectious Diseases (NIAID) is implementing a technique whereby active investigators in a particular subject matter agree to participate in submitting their research progress notes for fast, informal communication amongst a small group of geographically scattered scientists. In its exploration of this technique, NIAID has achieved success in collating such material in the area of antiviral substances with its monthly scientific memorandum, *Interferon.* Further, in its thrust to expedite research, NIAID maintains as a source for qualified scientists specimen and data banks of antisera and antigens for viruses, mycoplasma, and tissue typing reagents for transplantation.

All four of the following information analysis centers of the Neurological Information Network of the National Institute of Neurological Diseases and Stroke are now fully operational: Parkinson's Disease Information and Research Center (Columbia University), Brain Information Service (University of California at Los Angeles), Information Center for Hearing, Speech and Disorders of Human Communication (Johns Hopkins University), and the Vision Information Center (Harvard University). Each of these centers serves as a focal point for information relating to its specific area of interest through involvement of scientific specialists who maintain constant surveillance over the literature, publish fully-evaluated reports on the status of research in their specialized areas, and participate in workshops, conferences, and symposia sponsored by the respective center. Success in this approach is highlighted in the work of the Parkinson's Information Center where through workshops and state-of-the-art analyses a major advance is occurring in the treatment of Parkinson's disease with the investigative drug L-DOPA.

The Bureau of Health Manpower established the Health Manpower Intelligence Center to collect, analyze, and provide information on available health manpower, on activities to increase and improve the supply of such manpower, on present and projected needs, and on related demographic and socio-economic data. Plans also call for the structuring of a Health Manpower Information Clearinghouse that will provide a source of basic reference materials and information on the content and availability of health manpower education and training programs and the nature of financial assistance for students.

In its attempts to provide a more thoroughly evaluated and unified format of information services, the National Institute of General Medical Sciences (NIGMS) is fully operational in a program aimed at assessing the status of fields of science within its domain of responsibility. Through this state-of-the-art approach, NIGMS publishes evaluative reports developed by the scientists on the training committees of the Institute that not only highlight general trends in specific research disciplines (pharmacology and toxicology, surgery, genetics, biomedical engineering, and so forth), but also indicate new directions influencing research and research training.

The Division of Computer Research and Technology provides NIH with resources for research, development, and consultation for the design and implementation of project-supporting computer systems necessary to collect, transmit, control, and display biomedical data. As one of its more recent demonstration projects, the Division formulated a program aiding in medical diagnosis by relating disease indicators (laboratory tests, physical signs, and so on) to the diseases manifesting such indicators. The computer provides the user with lists of the possible diseases that could cause the symptoms, signs, and laboratory test results observed in a given patient.

The National Institute of Child Health and Human Development is structuring a number of information centers specializing in the collection, analysis, abstracting, and storing of published material in the areas of aging, growth and development, and reproduction and population. The Aging Information Center is publishing an experimental issue of *Adult Development* and *Aging Abstracts* illustrating the hierarchical divisions and subject headings that may be manipulated. The Reproduction and Population Information Center through an annual publication entitled *Current Population Research* will provide source material on population research. The Growth and Development Information Center continues in its developmental phase. Future plans call for the publication of evaluative reviews pertinent to the subject matters of interest of each center.

The National Institute of Arthritis and Metabolic Diseases (NIAMD) maintains its emphasis on scientific communication through secondary publications and conferences. In 1968, *Endocrinology Index* joined the NIAMD list of continuing publication (*Diabetes Literature Index, Gastroenterology Abstracts and Citations, Arthritis and Rheumatic Diseases Abstracts*, and *Artificial Kidney Bibliography*).

The National Library of Medicine

Lister Hill National Center for Biomedical Communications. On August 3, 1968, President Johnson signed Public Law 90-456 (Senate Joint Resolution 193) naming the new facility to be constructed by the National Library of Medicine as the Lister Hill National Center for Biomedical Communications. Secretary Cohen, on September 18, 1968, established the Center as an organizational entity which has as its mission the development of a biomedical communications network with the following components: library services; specialized information services; specialized educational services; audio and audiovisual services; and a data processing and data transmission support component.

As a facility, the Lister Hill National Center for Biomedical Communications will house, in addition to the Center staff working on the Biomedical Communications Network, the Library's Extramural program, the Specialized Information Services program and the Office of Computer and Engineering Services.

Biomedical Communications Network. Significant progress was made during the year toward the planning of the Biomedical Communications Network described above. A technical development plan providing guidelines for the development of the five components has been completed, as has a management process document assigning responsibilities for the phased development of the Biomedical Communications Network.

MEDLARS II. Functional specifications for a system to provide the Library with an increased computer processing capability were advertised for bids which were opened on November 21, 1967. A thorough review of proposals recieved from the resulting request for procurement (RFP) was accomplished during the Spring, and on June 11, ,1968, a contract was awarded to Computer Sciences Corporation.

MEDLARS II will consist of three levels; Level I will provide a capability of performing present functions on the new system with some amplification. Levels II and III represent increasingly sophisticated capability, which will include computer-aided indexing, cataloging and search, in addition to remote query. The Library anticipates attaining operational status of Level III in 1972.

Regional Medical Libraries. Under authorities of the Medical Library Assistance Act, grants were approved to the following institutions to act as units of a national system of regional medical libraries:

New York Academy of Medicine, New York, New York
Philadelphia College of Physicians, Philadelphia, Pennsylvania

John Crerar Library of the University of Chicago, Chicago, Illinois

University of Washington's Health Sciences Library, Seattle, Washington

These libraries are in addition to the Francis A. Countway Library of Harvard University, regional library for the New England States, which was established in 1967.

The National Library of Medicine itself has assumed the functions of serving as a regional medical library for the surrounding states. Progress has been made toward coordination of the functions and services of the regional libraries.

International Activities. In addition to continuing its services to developing countries on behalf of the Agency for International Development, the National Library of Medicine participated in a number of other international activities.

In cooperation with the Pan American Health Organization, the National Library of Medicine advanced the programs of the Regional Medical Library for South America, located at the Escola Paulista da Medicina, Sao Paulo, Brazil, assisting it in recruiting a Director and assisting it in its book procurement program.

In addition, the Library has assisted the Gorgas Memorial Laboratory, Balboa Heights, Canal Zone, which will be providing services to the Central America countries.

The Deputy Director served as a member of the Advisory Group, representative of large operating systems, to the Central Committee on the ICSU/UNESCO Feasibility Study for a World Science Information System.

The Deputy Director also represented the National Library of Medicine in negotiations conducted through the Organization for Economic Cooperation and Development (OECD) intended to share MEDLARS search capability with European member states of OECD.

U. S. National Libraries Task Force on Automation and Other Cooperative Services. Throughout the year the Library contributed significantly to the activities of the U. S. National Libraries Task Force on Automation and Other Cooperative Services through participating in the work of its working groups. With the cooperation of the Council on Library Resources, Inc., one man was assigned full time to the project.

Progress has been made on agreement on the elements of descriptive cataloging of books, on agreement to follow the MARC II communications format, and on the National Serials Data Program.

Remote Information Systems Center. The research and development staff established a Remote Information Systems Center (RISC) for the purpose of experimenting with search modalities to access remote files. At the close of the year, the Library was searching on a shared-time basis, literature files in Santa Monica, California and Cambridge, Mass. The MESH indexing vocabulary has been loaded into files at the Lincoln Laboratories for experimental purposes, and the Library has gained experience in searching the physics literature files at MIT/MAC Project, Massachusetts Institute of Technology, Cambridge, Mass. In addition, the State University of New York at Syracuse, under contract with the National Library of Medicine, accomplished reprogramming to convert approximately 30,000 existing card catalog entries into MARC I format, as well as programs to search this data base by author, title and subject. When the details of MARC II conversion programs become available, the MARC I records will be converted into MARC II.

Both SUNY and the Countway Library at Harvard, are also participating in a shared-cataloging input program with the Library.

Consumer Protection and Environmental Health Service

The Consumer Protection and Environmental Health Service (CPEHS) of the Department of Health, Education and Welfare was officially established on July 1, 1968. Its structural components include the Office of the Administrator, The Food and Drug Administration, The National Air Pollution Control Administration, and the Environmental Control Administration. These administrations represent the operational capabilities within the Department which protect the health and welfare of the American Public from environmental hazards.

Office of the Administrator. Under the Assistant Administrator for Research and Development a service-wide science information service is planned which will make scientific and technical information accessible to all service organizations and to the environmental health community. Existing information systems within the service will be modified and the new ones developed as needed to provide an efficient system compatible with other related systems both in and out of the Service. The Office of the Assistant Administrator for Administration is presently conducting an inventory of all scientific and technological information systems within the Service. Coordination of service wide use of the CPEHS computer has been in this office.

A future interface will be storage of all toxicological information developed within CPEHS in the Lister Hill National Center for Biomedical Communication established within the National Library of Medicine.

FDA's Science Information Facility (SIF) installed a new computerized chemical structure search system in the CPEHS computer. This search system was obtained by FDA under a National Science Foundation contract extension from the Chemical Abstracts Services (CAS). CAS uses this system for its own chemical registry and this is the first instance of its use outside of CAS. Major blocks of compounds can be added to the computer file only through CAS and a contract for file updating and maintenance will be negotiated by FDA. Information will be added to this file relative to chemical compounds from subject areas of interest to all CPEHS agencies.

Food and Drug Administration (FDA). The responsibility for technical and scientific information programs within FDA is under the Director for the Science Information Facility (SIF) within the Office of the Associate Commissioner for Science. The SIF is organized in four staffs.

The Chemical Information Storage and Retrieval Staff is concerned with computerized information systems. The Chemical Abstracts Service chemical registry system (*vide supra*) for storage and retrieval of chemical information became operational in the latter part of 1968 and is available for use on the CPEHS computer to all interested components of CPEHS. CAS has prepared Master Synonym Tapes of chemical names, registry numbers and molecular formulae.

Desktop Analysis Tools (DAT) for manual searches are scheduled for late in 1968 and additional copies on microfilm will be available through the Federal Clearinghouse. The 5x8 chemical structure card file is only partially completed and several thousand errors or structural representation inconsistencies have been corrected in the approximately 18,000 cards provided in CY 1968. Biological information retrieval remains a major staff objective. In addition to the Chemical Abstracts Services Substructure Search System which provides both fragment and iterative search capabilities, the Wiswesser Chemical Line Notation which provides directory-type rapid "look-up" search capabilities is also being developed. Evaluations on ability to search and cost per search will be made for each system.

The Labeling Information Storage and Retrieval staff has established a computerized label data bank containing records on approximately 6500 drug products for human consumption. This is an expanding operation with updating of current drug records and adding of new drug records as the information becomes available. This information service will be expanded to include data on veterinary drugs, hazardous substances, pesticides, food and color additives, etc. The first pilot edition of the National Drug Code Directory (NDCD) was published in April 1968. This is a computerized product directory listing approximately 4,000 drugs (both prescription and over-the-counter) by trade name, established name, manufacturer, dosage form, dosage strength and package size. Incorporation of this data into a definitive edition, the Federal Drug Compendium, has been delayed pending review and approval by the Subcommittee on Nomenclature and Coding, task force on prescription drugs (commissioned by the Secretary, DHEW). With approval SIF will assign labeler identity codes or furnish labelers with instructions for assigning product and trade package codes.

The literature services staff administers the two FDA library facilities and is installing mechanized literature search services such as Ringdoc, Chemical Abstracts Concentrates, Index Chemicus, etc., for alerting and retrieval search projects. The FDA libraries are a part of the network of libraries cooperating in the use of TWX for expediting interlibrary loan. This network centers around the National Library of Medicine and has enabled the libraries to receive material in half the time it takes by letter. The Medical Library published the bimonthly FDA Clinical Experience Abstracts. Both the abstracts and title keywords are placed on tape for computer input.

The systems and mathematical analysis staff conducted a study of FDA's science information processing procedures and user needs as they applied to the recently installed Combined File Search (CFS) computer system. A master FDA thesaurus is being compiled to facilitate proper use of the CFS system. The Combined File Search has been demonstrated to CPEHS personnel having interest in search and retrieval capabilities.

The Food and Drug Administration continues to use and have an input into the Science Information Exchange (SIE) of the Smithsonian Institute. Duplicate FDA reports have been purged from the SIE system. A new reporting procedure to SIE is under consideration.

National Air Pollution Control Administration (NAPCA). The Air Pollution Technical Information Center (APTIC) has an input of approximately 4000 new documents for calendar year 1968. Greater than 40% of the input is of foreign origin; the language breakdown being in the following sequence: English, Russian, German, Japanese, French and the Italian, Polish, Spanish, Swedish plus various other languages combined constitute the remainder. Sixty percent of the input is derived from open literature (journal articles, proceedings, etc.); 20% from preprints and 20% from technical reports (PHS, CFSTI AEC, etc.).

APTIC solicits assistance from the American Petroleum Institute, Defense Documentation Center, Clearinghouse for Scientific and Technical Information, Science Information Exchange, National Referral Center, Library of Congress and various other personal contacts within and outside the Government in locating needed information, getting copies of documents or learning where needed sources of information can be found.

Other sources utilized during 1968 have been contracts. On June 30, 1968, the final input from Bay Area, which brought APTIC up-to-date with the Bay Area files, was purchased and incorporated into the APTIC system. A contract with the Franklin Institute was completed in August 1968. This work is now being accomplished by the 3 I Company – Information Interscience Incorporated. These contractors furnish input from approximately 1000 journals and other documents as appropriate. A contract with the Air Pollution Control Association (APCA) was renewed September 1,1968, which provides input from approximately 200 source documents and also produces the APCA Abstracts.

The APTIC user audience represents the National Air Pollution Control Administration (NAPCA) and other Federal agencies, universities, industry, state and local government groups who are involved in air pollution control, and other technical societies and individuals.

Requests are received in the form of telephone calls, letters, or personal visits. The user receives his information in the form of abstracts of the appropriate documents and those individuals within NAPCA may request copies of documents.

APTIC also has an SDI Program which furnishes current information to the participant, as related to his specific interests. This data can be requested on a monthly or two-week time span.

The Center is presently considering the use of the IBM 360-40 computer located in Consumer Protection and Environmental Health (CPEH). Pilot studies and runs are currently in progress utilizing the Central File Search System. Tapes produced on the IBM Selectric Typewriter (MTST) will be used as a vehicle for our input to the computer.

The Storage and Retrieval of Air Quality Data (SAROAD) system has been developed in NAPCA. This is a computerized system for the storage and retrieval of raw air pollution data generated in the manifold research, monitoring and surveillance networks. These include not only in-house monitoring programs, but also those of State and local agencies. The SAROAD system permits rapid retrieval of air quality measurements made anywhere in the United States and makes this basic information readily available for use in a broad range of research and technical projects. Information retrieval requests are made by all the contributing agencies for summaries and analysis of their input data. These services are for the most part beyond the scope of their own facilities. SAROAD is an air quality data file system. Parallel data file systems to handle other types of data such as emissions inventories, air pollution effects or socioeconomic data are within the system capabilities.

NAPCA continues to use and has an input into the Science Information Exchange of the Smithsonian Institute and the Clearinghouse for Federal Scientific and Technical Information (U. S. Dept. of Commerce). The NAPCA Office of Technical Information and Publications continues its distribution of Air Pollution Technical Documents to a limited readership.

Environmental Control Administration (ECA). The Bureau of Radiological Health within ECA has several scientific and technical information systems:

1. The Medical and Occupational Radiation Program (MORP) continued to develop its optical coincidence storage and retrieval system. This information system was developed primarily to provide program staff ready access to technical information. MORP is expanding its present capabilities with the Key Word in Context (KWIC) index to facilitate anticipated conversion to computer storage and retrieval of its files. It continues to use and has input into the Clearinghouse for Federal Scientific and Technical Information.

2. The Radiotoxicology Information Center is a pilot project which was begun in November 1967 designed to study the feasibility of establishing a full-scale operating information center. The system has progressed during CY 1968 from an initial notched card system to an electrical random card filing system. Input into and use of the Information Center for Internal Exposure (USAEC, Oak Ridge), the Nuclear Safety Information Center (USAEC, Oak Ridge), the Toxicology Information Program (National Library of Medicine) were continued throughout the year by the Radiotoxicology Information Center.

3. The Radiological Health Standards System continued to use the optical coincidence system for storage and retrieval of scientific and technical information. The system was developed primarily for program staff but stored information has been retrieved for State and local agencies and the World Health Organization.

4. The Radiological Health Library continued to provide regular library services and continued to participate to the inter-library loan service.

The Bureau of Occupational Safety and Health within ECA maintains the Scientific Reference Service (SRS). SRS continued to use and expand its optical coincidence system for information storage and retrieval. The thesaurus for occupational health was developed to be consistent with the descriptor term concept used by the Defense Documentation Center. The system is compatible for computer procedures, but present volume of entries into the system does not warrant conversion to computer storage and retrieval. The SRS is backed by a reference library.

The Bureau of Solid Wastes maintains the Solid Waste Information Retrieval System, (SWIRS). Present capabilities are limited to manual optical coincidence techniques. This is a pilot project which was developed to carry out Sec. 204(b)(1), of the Solid Wastes Disposal Act (PL 89-272, Oct. 1965). After the pilot period of one year plans are to automate the search and retrieval functions. SWIRS is backed by a reference library.

ECA continues input into or use of the Science Information Exchange, the Defense Documentation Center, and the Federal Clearinghouse for Scientific and Technical Information.

Health Services and Mental Health Administration

National Center for Health Services Research and Development (NCHSR&D). The National Center for Health Services Research and Development was formally established on May 1, 1968, as authorized by the Partnership for Health Amendments of 1967. The Center is part of the Health Services and Mental Health Administration.

The NCHSR&D serves as the Federal focus for health services research and development. It supports, conducts and fosters a national program of research, development, demonstration and training projects addressed to major problems in the availability, organization, distribution, utilization, quality and financing of health services and health care facilities. The Center's programs are directed to developing new methods of improving existing methods of organizing, delivering and financing health services. The ultimate goal is to assist physicians, hospitals and clinics, health professional schools, governmental and voluntary health agencies and health insurance firms to improve the distribution and quality of services and to make more efficient use of manpower, funds and facilities.

Priority has been given initially to research and development directed to improving health care programs for the disadvantaged, and to problems affecting the costs of medical care. A major long-term intramural project will be the development of a national health services data system.

The *National Center for Health Services Research and Development* is working towards a three-part communications effort:

annotated bibliographies

publications of reprint series

scientific conferences focused on specific R and D topics

National Institute of Mental Health. The programs of the National Institute of Mental Health include diverse activities ranging from resources for the delivery of direct health services to the training of mental health manpower to the conduct and support of basic and applied research. The field of mental health is of interest not only to professionals in the field, but also to those who have occasion to use mental health concepts in their work—–such as clergy, physicians in general practice, lawyers, police and prison officials, and a wide range of physical and social scientist—–and to students and to family members of the mentally ill. Mental health in the broadest sense is a measure of the quality of life, and is therefore also of interest to the general public.

The Office of Communications, recently organized within the Institute, is designed to transmit accurate information promptly to these widely different groups. The scientific and technical information branch of the Office, the National Clearinghouse for Mental Health Information, is the formal Institute resource for collecting, analyzing, and disseminating scientific and technical information and has basically three functions. First, it provides scientific information both upon individual request and in the form of recurring and single issue publications. Second, it provides scientific analyses and compilations which present an overview and synthesis of current research activities. Third, it attempts to develop new solutions to burgeoning scientific information problems and devises improvements in its storage and retrieval system. More than 14,000 items have been added to the information retrieval system in the last year, including more than 7,000 new research reports and 7,000 abstracts. This brings the information stored to some 60,000 items, the largest known collection of current mental health information.

As current information is collected and processed, it is abstracted or retrieved on the basis of areas of interest and packaged into "current-awareness" journals. The NCMHI has continued to publish *Mental Retardation Abstracts, Crime & Delinquency Abstracts, Psychopharmacology Abstracts, Psychopharmacology Bulletin, Occupational Mental Health Notes,* and *Drug Dependence* and *Abuse Notes* to satisfy needs in these areas; and has launched a well-received new journal, *The Bulletin of Suicidology,* which includes both articles and abstracts. A broad-scale journal containing current developments and digests of original research reports was inaugurated as the *Mental Health Digest.* This publication has met the need for a general publication for the entire mental health program and has met with exceptional endorsement and use by a wide spectrum of consumers. Analytical papers reviewing, synthesizing, and evaluating the literature have been prepared in a number of areas, such as mass violence and creativity in children. Most have been in areas of critical current interest in which little comprehensive work had previously been done. In addition, an improved information retrieval system has been implemented and original scientific documents are stored on microfilm, saving money and manpower.

Office of Systems Management. A management information system to serve the Health Services and Mental Health Administration (HSMHA) has advanced to the developmental state. On a test basis, the system is accepting information from notice of grant awards as the first step in building a management data base. When the grants management section of the system becomes operational, it will accept grant applications and follow them from review, approval and project period to termination. In addition to providing information on grants, the computerized system will also produce the documentation for grants management which heretofore has been a tedious manual task. Though effort is now directed toward grants, the management information system will be developed to encompass all the major areas of HSMHA management.

An Office of Systems Management has been established within the Administrator's Office in part (1) toplan and develop the specifications for, and implement Administration-wide systems for recording, processing, reporting, and maintenance of data for program planning, direction, and control; determines total management data requirements for Administration's staff policies; provides technical services to the Office of the Administrator in data systems design; (2) to insure that management data needs are met and that adjustments are made to accommodate new areas of interest and changes in program emphases or goals; and (3) to assure consistency of the Administration's data systems with applicable Department-wide requirements.

Community Health Service (CHS)--Community Profile Data Center. The Center is designing, building, and will maintain an inventory of all health and health related resources of the United States. In addition, the Center is developing primary definitions for information systems which will be used for comprehensive health planning activities throughout the country.

The Center also supports and carries out a wide range of statistical activities in support of Federal health planning programs. It is concerned with questions of data bank design, multiple file integration and the development of standard output reports which describe the health status of communities using the "profile" approach.

National Center for Health Statistics (NCHS). The National Center for Health Statistics, a research oriented statistical organization, was established in 1960. The Center exercises an overall responsiblity in the diverse areas of health statistics.

The Center is committed to provide a factual statistical basis for planning national programs designed to advance the health and well-being of the American people. Therefore, the Center provides national leadership in collecting, analyzing, and disseminating essential statistical data which should underpin the development of sound national health policies and programs.

In all phases of its activities, the Center gives assurance of confidentiality, adhering to the Public Health Service's strict policy regarding confidentiality of all data collected. Thus, all information which would permit identification of an individual or an establishment is used only by authorized staff members and only for statistical purposes.

The Center's mission is accomplished through the following Offices and Divisions:

The Office of Program Planning and Evaluation consults on mathematical, statistical, and probability theory and methods; conducts mathematical research related to health topics; develops sampling techniques and methodology for analyzing data from complex surveys, including modification of statistical models to facilitate solutions by computers; and exercises surveillance to assure the statistical adequacy of the Center's programs.

The Office of State Services provides technical assistance to States and local areas in vital and health statistics and records programs; conducts a training program of vital and health statistics theory and practice for State and local needs; and provides secretariat services to the Public Health Conference on Records and Statistics to develop cooperation among Federal, State, and local agencies in vital and health statistics.

The Office of International Statistical Programs plans and directs the Center's international activities in vital and health statistics concerned with statistical aspects of international health and demographic problems; stimulates and develops methodological-statistical research projects in foreign countries; conducts a health statistics, demographic, and vital registration training program for foreign nationals; and advises foreign countries in these areas.

The Office of Information conducts a broad spectrum of informational activities to disseminate information to special groups and the general public, using audio, visual, and printed media; plans and conducts national activities to support the Center's continuing program of publishing and disseminating vital and health data to specialized professional users; and maintains a technical reference library.

The Office of Health Statistics Analysis analyzes and interprets health data to reflect demographic and socioeconomic factors; stimulates expansion of data for analytical studies; develops indexes of health; evaluates methodological approaches to data collection for trend analysis; studies and coordinates proposals to revise the International Classification of Diseases, cooperating with the World Health Organization; and acts as secretariat for the U. S. National Committee on Vital and Health Statistics.

The Division of Health Interview Statistics conducts household surveys to obtain data on health and demographic factors related to illness, injuries, disability, and costs and uses of medical services from preselected samples representing the Nation's civilian, noninstitutional population; provides technical assistance to the States, government agencies, and health organizations; appraises the quality and reliability of data and the methodology used; and develops new techniques for the production of data to be provided by surveys.

The Division of Vital Statistics promotes uniform collection of birth, death, fetal death, marriage and divorce records in a national registration system; analyzes and interprets official vital statistics; integrates technical and legal aspects of registration and the administration of vital registration systems; conducts surveys to expand the scope of national vital statistics beyond the data usually available from vital records; uses actuarial methods to construct annual life tables; and investigates the quality and reliability of the data and methodology.

The Division of Health Examination Statistics uses mobile clinics with teams of physicians, dentists, nurses, psychologists, and technical staff to conduct medical examinations to obtain data from a preselected sample of the Nation's civilian, noninstitutional population; provides data on the prevalence of illness and disability with emphasis on physical, physiological, and psychological measurements; and conducts research on the quality and reliability of the data and the methodology and techniques used.

The Division of Health Resources Statistics develops statistics on the characteristics of health resources and the utilization of health resources through surveys of the health occupations, the institutionalized population, hospitals, nursing homes, clinics, physicians' offices, laboratories, and related facilities; maintains a computer file of selected characteristics of individual hospitals, institutions, and personnel in selected health occupations; and conducts research on survey methodology and on the quality of health resources and utilization data.

The Division of Data Processing provides data processing services for the Center; develops general programs for the computer and provides technical expertise in systems analysis and programming; conducts training institutes in nosology and computer methodology for State personnel; provides technical assistance to the States, other elements of the Public Health Service, and related organizations; originates methods to process, transmit, and retrieve data; and maintains a statistical processing quality control program.

Health Facilities Planning and Construction Service (HFPCS). The Service, which is responsible for implementing the Hill-Burton Health Facility Construction Act, requires an annual health facility plan from each State to be developed by a designated "Hill-Burton" agency.

The plan contains an inventory of all health facilities within a given State, or several States by type of ownership; size of facility, type of facility, types of services, and an estimate of the relative degree of obsolescence of the facility.

Within federally established criteria each plan reflects the relative need for either additional facilities or modernization of existing facilities by several intra-state planning areas. This relative need within the State is then used as a basis for developing priority for Hill-Burton assistance.

The plan, and consequently the inventory, is revised at least once annually and the material from the 50 plans is consolidated and published under several titles for public use.

At the present time it is the most complete source of information available for determining and planning for national health facility needs.

Social and Rehabilitation Service

Early in 1968, the Division of Research and Demonstration Grants published new editions of the *Annotated Listing* of all current and completed research projects and of the *Bibliography* of final reports and articles resulting from the projects. Both are widely distributed to interested professional persons. In September 1968 the *Guide* for preparing final reports was revised, emphasizing inclusion of an author abstract, and highlighting of usable results and their implications for practices. In addition, each project director is now asked to distribute his report to about 200 professional consumers.

The new Research Utilization Branch within the Division continues to prepare *Research Briefs* highlighting usable research results for practitioners, administrators, and trainees. These go to over 20,000 individuals and agencies. A call in the *Guide* for each project director to draft a *Research Brief* of his report is expected to facilitate this whole effort. The *Briefs* have been very well received by workers in the field. In addition, plans to sponsor one "Research Utilization Specialist" in each of nine Regions are complete, and it is hoped all nine can be funded before the end of FY 1969. The Branch also plans to let a contract to abstract and index all final reports received to data, to make their findings more accessible to professional users. Several research utilization conferences, bringing together researchers, practitioners, and administrators, have also been sponsored to stimulate utilization of new findings. A new effort has been the "debriefing" of a project director whose research has produced usable results, for the benefit of interested professionals. It is also planned to have such project directors present their usable results at strategic meetings of practitioners and administrators to stimulate innovation. In addition, the Division continues to sponsor research on the dynamics of utilization and innovation. Among other ongoing activities are nine Rehabilitation Research Institutes in as many universities, each pursuing research in a core area of social or rehabilitation service and publishing a series of monographs which are distributed to professionals in the field.

Work continued in 1968 toward an information retrieval system to store and retrieve scientific information generated by SRS research programs. In June, a comprehensive report, with recommendations, was completed by the Division of Statistics and Studies. Included were specific methodology for designing, evaluating, maintaining, and expanding the system; cost estimates in terms of personnel and equipment needs; and an implementation schedule. While budget problems make implementation uncertain, all basic spadework has been done.

A number of other programs under the Assistant Administrator, Office of Research, Demonstrations and Training, are producing and disseminating scientific information: (1) The Division of Research and Training Centers, with 18 such Centers in as many universities, sponsors basic and clinical research. Many articles and reports of importance to SRS are produced by the Centers and published in professional journals. (2) The Division of Intramural Research is now developing research and will coordinate its ultimate dissemination to the field. (3) The Office of Public Affairs publishes *Welfare in Review*, a bimonthly journal which goes to over 7,000 professionals, libraries, and State and local welfare officials. (4) The Office of International Activities administers over 180 research and demonstration projects in "excess currency" countries. Its grantees distribute copies of final reports on their completed projects to interested persons and agencies in their own and other countries, and publish summaries of them in professional journals. The Office also works closely with many international organizations, such as the World Rehabilitation Fund and the International Society for the Rehabilitation of the Disabled, to facilitate exchange of scientific information.

The Rehabilitation Services Administration (RSA) publishes the bimonthly *Rehabilitation Record*, which carries special articles and descriptions of completed and current research. It goes to about 7,000 libraries, administrators, and professionals. The Division of Training within RSA has about 550 projects in 19 fields, all focusing on the training of student professionals. This Division also publishes a variety of monographs for the use of students and practitioners, and has as a by-product many M.A. and Ph.D. thesis, plus related professional articles which are published in journals. In addition, RSA has a Public Information Office, which engages in certain activities involving scientific and technical information.

The Office of Public affairs of SRS publishes an *SRS Newsletter* which in each issue reviews a timely research report. The *Newsletter* goes to all SRS Central Office and Regional employees, all SRS professional advisory committee members, and a number of other agencies.

Aging, a monthly magazine, is put out by the Administration on Aging, and is received by over 14,000 professionals in programs for the aging at Federal, State, and local levels.

The Children's Bureau publishes *Children,* a bimonthly journal for professional workers in various service programs for children. It has an interdisciplinary focus, carries articles by experts designed to keep these professionals in touch with new knowledge, and has a circulation of about 24,000. The Bureau also prepares technical publications for professional and civic use, and pamphlets for parents. The Child Life Studies Branch of the Bureau operates a Clearinghouse for Research in Child Life which collects and disseminates information on current unpublished research on children. The Clearinghouse publication, *Research Relating to Children,* contains abstracts of research in the fields of child development, education, psychology, sociology, psychiatry, and social and health services for children. It goes to about 4,000 researchers, libraries, directors of research centers, heads of university departments, and other professionals. To date, more than 10,000 studies have been abstracted and reported in the Clearinghouse publication.

DEPARTMENT OF THE INTERIOR

Departmental Library

The Departmental Library continued to support a large range of natural resource programs through maintenance of a strong central collection of natural resource, management, legal and other related literature. In addition, the Departmental Library produced bibliographies and indexes in such areas as fish and wildlife, recreation, endangered species, mineral resources and law. Development was begun on the first Interior "union list of serials" and a project for specialized literature searches was initiated in support of fish and wildlife research undertaken by State agencies under grants from the Department. Through expanded use of FTS facilities, the resources of the Departmental Library were increasingly made available to the Department's scientific and technical personnel located throughout the country—–with special attention to those located in areas with limited local information sources. Current awareness table-of-contents series in law and management were also made available to larger audiences within the Department.

In order to promote greater coordination of the Department's library services, it was decided to hold annual workshops of all librarians. The workshops will provide training in information services and expose all librarians to the full literature resources of Interior.

Office of Water Resources Research

The Water Resources Scientific Information Center has established by contract, grant, and agreement, eight centers of competence in two Federal agencies and six Universities to review, select, abstract, and index in a standard format suitable for conversion to machine tape, significant items from specific subject areas of the water resources literature.

In addition, specific agreements with the Water Resources Research Institutes in each of the 50 states and Puerto Rico and with the major Federal agencies engaged in water resources related activity, provide for abstracting and indexing in the standard format of the water resources related publications of that agency.

Input from the above sources at the rate of 1000 abstracts per month produces the Water Resources Scientific Information Bank, which is the source of its twice monthly abstract bulletin, *Selected Water Resources Abstracts,* and its selective dissemination of information (SDI) system.

By contract with the Science Information Exchange of the Smithsonian Institution, WRSIC published volume 3 of the *Water Resources Research Catalog* which provided summary descriptions of 4,193 active research projects in water resources.

Other center products through a grant to the Water Resources and Marine Sciences Center, Cornell University, are a *Permuted Title Index* to 167 water resources journals and a special *Bibliography Upon the Effects of Heated Effluents on Aquatic Life.*

The Water Resources Scientific Information Center during the year engaged in the following system studies:

1. Development of a data collection plan which will identify user needs in water resources by type of information service, by subject discipline or subcategory of water resources and recommend priorities of user needs in relation to such types of services and subject discipline.

2. A consortium of the major commercial abstracting services has agreed to develop procedures by identifying, merging, and reformatting their water related output to meet the needs of the water resources community.

3. A research and development organization will identify and analyze the content characteristics of primary and secondary information sources in the water resources field, particularly the technical journal literature covering water-related aspects of sociology, economics, and law.

Bureau of Commercial Fisheries

During 1968, the Bureau of Commercial Fisheries (BCF) completed and sent to the printer an author, serial, and subject index to fishery publications issued by the Fish and Wildlife Service from 1955-64. Material for a 5-year index (1965-69) is being kept current. Cost of 10-year index is about $20,000.

BCF continues to contribute to the National Oceanographic Data Center, which stores and retrieves the vast amount of oceanographic data collected by vessels. Cost to the Bureau in 1968 was $167,000.

The Fish and Wildlife Service *Data Reports* continue to be issued by BCF. The use of microfiche for this series and another report of the Bureau has saved several hundred thousand dollars during the past few years.

Use of computers in the Bureau of Commercial Fisheries to edit, store and help analyze scientific and statistical data used in research in economics, marine biology, and oceanography cost approximately $150,000 in 1968, an increase of 15 percent over the previous year.

During the year a pilot data communication project was started to link Biological Laboratories at Beaufort, North Carolina; Ann Arbor, Michigan; and Seattle, Washington with the Interior Computer Center in Washington, D. C.

Computing and communications equipment installed in Seattle and Beaufort is now being used. The development of national and regional data files for fishery statistical data and sharing of computer programs and other information among the laboratories and other Interior agencies is being explored.

Bureau of Mines

Listing of Current Basic Research Projects on Coal. The Bureau of Mines has published a report that lists all current basic research projects on coal conducted by university, industry, and government laboratories. An author/investigator and address list is included in the publication.

Material for Water Resources Scientific Information Center. Under a cooperative agreement with the Office of Water Resources Research, the Bureau of Mines has agreed to supply publications, abstracts, and index terms on water-resource related documents to the Water Resources Scientific Information Center (WRSIC) at Denver, Colorado. In return for water-resource related information, the Center provides the Bureau with a selective dissemination of information on relevant developments in the physical, life, and social sciences; current awareness bulletins, abstract bulletins, and topical bibliographies. The Office of Mineral Information is coordinating the submittal of material from the Bureau to the Center.

Computerized Bibliography on Helium. The Bureau of Mines is submitting to the Government Printing Office the printout of a bibliography on helium which is being put into a computer under various subject headings for future retrieval. The publication is titled *Helium: Bibliography of Technical and Scientific Literature, 1962, Including Papers on Alpha Particles.* This is the first computerized bibliography of the Bureau of Mines and will be published annually. It is a supplement to earlier publications on the subject (Bulletin 484 and Information Circular 8373). Entries in these bibliographies will eventually be put in the computer so that virtually all literature on helium can be retrieved under various subject breakdowns.

A computerized system of document control is utilized by the Health and Safety Activity to facilitate data processing in accident analysis work and to provide ready availability of data that is needed by the Bureau, other government agencies, and the public. It covers worktime and injury reports acquired from all mineral extractive and processing operations in the U.S.A., and involves collating information from about 38 thousand documents each year. The system includes: (1) A continuingly current identification of each mine and mineral-processing plant. (2) Classification of all operations covered into general groups such as coal, metal, nonmetal, stone, and others. (3) Subclassification into more specific groups such as copper, iron, lead-zinc; and others.

Oceanographic Data. The Marine Minerals Technology Center, at Tiburon, California, supplies oceanographic data to and receives data from the National Oceanographic Data Center.

Minerals and Fuels Data. An information system is being established within the Bureau of Mines to provide for rapid and flexible retrieval of minerals and fuels data for use in preparing a variety of special reports. Each year brings an increased demand for special but differing applications of data available to the Bureau of Mines and nearly every request requires assembling the information in a different way. Thus, in the interest of accomplishing a more thorough utilization of information at hand with fewer manhours expended, the system will be developed to apply modern data storage and retrieval systems to specialized minerals and fuels data.

Bureau of Outdoor Recreation

Volumes I & II of *Index to Selected Outdoor Recreation Literature* have been published; Volume III is about ready to go to the printers. Points of reference to the citations with abstracts are provided in subject, name and geographic indexes at the back of the publication.

In cooperation with Science Information Exchange, two annual *Catalogs of Outdoor Recreation Research* have been compiled and published.

The Bureau of Outdoor Recreation has organized a Division of Statistics and Data Processing which is now developing a program involving acquisition, storage and retrieval of all pertinent outdoor recreation data.

In cooperation with the Interior Department Library, and the Department of Recreation and Parks at Texas A&M University, a review draft edition of the thesaurus of outdoor recreation terms (descriptors) has been developed. Terms selected are being used in describing subject content of recreation research documents, reports and articles for computerized storage and retrieval.

Bureau of Reclamation

Reclamation conducts a current awareness program on developments in the planning design, construction, and operation and maintenance of water resources projects, including hydropower. One feature is a system for selective dissemination of information utilizing a computer to match keywords representing technical documents with keywords in interest profiles of individual scientists and engineers in Reclamation, the output being an announcement card, with feedback features, containing abstract, index, and bibliographic data. User population: 2,000.

Reclamation's *Thesaurus of Descriptors* (1963) has been computer-merged with the Office of Water Resources Research *Water Resources Thesaurus* (1966), and supplemented with candidate terms. Data are now being collected on the use of the Thesaurus in preparation for a revised edition.

A patented shingle-filing retrieval system for individuals has been offered to all users. Each requesting participant is furnished heading sheets highlighting his interest profile for shingle filing abstract cards, enabling retrieval of references at a glance.

A study was made of user receptivity to information dissemination correlated to salary level. A feedback system gave statistics on the percentage of documents requested for reading as compared to the percentage of documents declared of interest.

The Operating Facility of the Water Resources Scientific Information Center has been located in Reclamation and has been furnishing SDI and abstract bulletin services in the Federal Government and the State Water Resources Institutes.

Bureau of Sport Fisheries and Wildlife

The National Reservoir Research Program is continuing the collection and collation of available biological, physical and chemical data on reservoirs from the literature, and from the Branch of River Basin Studies, BSFW, USCGS, Bureau of Reclamation, Corps of Engineers, USPHS, TVA, Branch of Federal Aid, BSFW and State Fishery agencies. Project includes development of methods of storage and retrieval of large masses of data, and statistical analysis of interrelationships.

Specialized bibliographies prepared by the Department of the Interior Library and the Conservation Library Center, Denver Public Library include:

1. Age Determination of Wildlife; a Bibliography
2. Statistical Methods in Using Mark-Recapture Data for Populations
3. Oil Pollution of Marine Waters
4. California Condor
5. Natural Resources in Foreign Countries
6. An Index to Federal Aid Publications in Sport Fish and Wildlife
7. Selected Cooperative Research Project Reports 1965-1966
8. Thesaurus of Sport Fish and Wildlife Descriptors for Information Retrieval

A bird banding building will be completed in 1968 at the Patuxent Wildlife Research Center to house all continental banding data and wing, tail, and kill survey records of migratory game birds. Data processing equipment at this location, near Laurel, Maryland, will continue to provide analyses of these data for use in establishing game bird hunting regulations.

A system is being established by the Division of Pesticides Registration for the storage and retrieval of wildlife toxicological data generated by this Bureau, initially, and eventually encompassing similar data from other bureaus and from the literature.

Federal Water Pollution Control Administration

The Federal Water Pollution Control Administration continues to operate a computerized system known as STORET (Storage and Retrieval) to handle facilities data and water quality data collected by the FWPCA, for continuous comparison with water quality standards stored in the Department of the Interior's IBM 360/65 computer. The Geological Survey's water quality data is also incorporated in the STORET system.

The Administration under a signed agreement with the Water Resources Science Information Center (WRSIC) is beginning to expand its contribution to WRSIC and increase its utilization of the WRSIC products primarily in the area of Research and Development. The ground work is being laid for continued expansion of the input to and utilization of the services offered by WRSIC.

Geological Survey

Orthophotomaps. A new standard map product, the orthophotomap, was introduced into the National Topographic Program. Orthophotomaps covering the Okefenokee Swamp and a portion of the Everglades were published, and experimental editions covering various terrain types and metropolitan areas have been or are being prepared. An orthophotomap, with photoimage rendition of terrain features in correct position, offers to the map-using public a wealth of information not shown on a conventional topographic map.

Gemini Photograph Files. Photographs taken during the manned Gemini spaceflights have been filed by the Geological Survey's Map Information Office. Copies of the photographs, in color or black-and-white, and three photomaps made from selected photographs are available to the public.

Cartographic Application of Computer Graphics. In a cooperative effort with IBM, the Geological Survey is experimenting with a system to automatically record map information in digital form, process it in a computer, and reproduce it in graphic form. The long-range objective is to develop a system of storing and retrieving data on positions and elevations of topographic features for revising maps and for use in engineering studies.

Water Data. A catalog of information on water has been developed which serves as a source of information on the acquisition and availability of water data throughout the United States, and its territories, possessions and foreign installations. The catalog contains none of the data, listing information only. Two sections —— surface-water stations and water-quality stations —— have been fully implemented. Two other sections —— ground-water stations and areal investigations and miscellaneous activities —— are being processed. Two additional sections —— river-mileage determinations and water use —— are in the developmental state. Input to these six sections of the catalog consists of information supplied by Federal, State, and local agencies.

Continued emphasis was placed on automation of water-data collection program. Approximately 65 percent of the data collected at streamgaging stations is processed by automatic techniques using the Geological Survey nationwide computer system. In the past fiscal year there has been an increase in the number of automated water quality monitors. The data are processed through procedures similar to those used in computing streamflow records. At the present time approximately 150,000 station-years of streamflow records are available on magnetic tape files.

Studies have been undertaken by the Geological Survey in concert with other Interior Department Bureaus to develop an Interior-wide processing and storage system for water data. The data handling system is based on Federal Water Pollution Control Administration-Geological Survey procedures to store and retrieve water data collected by these agencies. For the immediate future the processing and storage of water data needed by Interior agencies can be accommodated by existing computer facilities and computer programs.

The Computer Center. Has implemented a loose-leaf subscription service titled Computer Program Abstract. This service is a collection of approximately 1,500 one-page abstracts about programs which are either in use in the Computer Center or under development for use with Computer Center equipment. The description is intended to provide sufficient information to determine if the program might be useful to someone other than the originator. The collection will represent projects presently underway as well as those which have been completed so as to avoid the concurrent writing of duplicatory programs.

Office of Saline Water

A Thesaurus for Scientific and Technical Desalting Information has been developed. This Thesaurus is being used in the preparation of a revised and updated bibliography of literature related to saline water conversion.

Bonneville Power Administration

The objective of the Bonneville Power Administration selective dissemination information (SDI) system is to provide a selective, periodic (4-5 times each month) dissemination of information in the field of Electric Power Transmission Engineering.

After a period of two years in operation, the growth of the SDI system has increased from 65 to over 100 Bonneville Power Administration participants (engineers, scientists and technicians). The number of profiles have increased from 400 to 665; the number of hard copies supplied has increased from 3,000 to over 4,500 per year; the number of periodicals and serials scanned has increased from less than 400 to over 500.

The major characteristics of the SDI system are:

1. The abstracts are matched to user's profiles by means of weighted terms (point-count criterion).

2. The sources for the input abstracts are original articles or abstracting services.

3. On request, the user is provided with a hard copy of announced articles.

DEPARTMENT OF STATE

Integrated Document, Information and Data System. In August 1968 detailed implementation was begun on the system. Initial emphasis is on selective dissemination, storage and retrieval of documents. End users, rather than bureaus, will submit detailed dissemination requirements to a central processing organization. User profiles will be entered into the computer. Documents will be indexed and the index records matched against the profiles to determine dissemination. The user will have the option of receiving full documents or periodic proxies which may serve his peripheral interests. The same index records will also serve future recall. While the index records and proxies will reside in the computer, the documents will be retained in microform.

External Research Publication and Retrieval System (XPARS). The Office of External Research of the Bureau of Intelligence and Research re-assessed and suspended the system begun in 1967 for computerized preparation of lists of academic research planned or in progress. Because of restraints on manpower and financial resources, transfer of the preparation of such lists to an academic center or professional association is being discussed. It was decided to put more emphasis on acquiring and distributing finished research papers within the Department and other Government agencies and to Foreign Service posts. INR is continuing to explore the possibility of installing an automated system.

Economic Problem Computations. The Bureau of Economic Affairs has installed a console for purposes of communicating with IBM computers for manipulation of data and solution of problems, mainly in the field of international trade.

Tariffs and Trade Policy. In addition, the Bureau of Economic Affairs has begun working on two major projects: (a) a Tariff Surveillance System that will monitor the effects of foreign tariff changes on U. S. legal rights negotiated under the GATT, and (b) a Trade Policy Analysis System that will provide policy makers with a quick and comprehensive assessment of the impact on U. S. interests of decisions in the field of foreign economic policy.

Design and programming for the Tariff Surveillance System has already been completed with the result that the E Bureau has a prototype functioning. Briefly, the Bureau has consolidated in the memory of the Department's computer all of the tariff concessions made by Spain since it joined the GATT together with the negotiating history of these concessions. During the coming year the Bureau plans to add the negotiating history of all its other trade partners to this system. When fully operating, the system will enable the Bureau better and more effectively to safeguard the U. S. trade rights.

As regards the Trade Policy Analysis System, the Office of Automated Data Processing has a completion date on this project targeted for December 30, 1969. When operational, this system will have in the memory of the computer: (a) all trade flows among nations (on a SITC basis) that are regularly reported to the UN, (b) weighted tariff averages that correspond to the SITC commodity categories, (c) import elasticities of demand and substitution, and (d) a series of economic models already programmed so that within 24 hours we shall be able to calculate the detailed effects on trade flows of any policy-induced price change at the border by any country or combination of countries on any combination of goods.

Selected Policy Statement Files. During 1968 an automated retrieval system was developed to manage selected kinds of policy statements. The system was set up to handle statements concerning a single geographic area. Approximately 5,000 documents or extracts and associated indexing information are stored, mainly from the period 1965-68. In addition, a file of public statements on foreign policy was being planned to begin in 1969. It will identify public statements of the principal Executive officials involved in foreign policy formulation and direction.

General. The Department participates in the planning of information handling systems through at least four channels relevant to foreign affairs. Some of these also involve operating or experimental systems:

a. Intelligence Information Handling Committee of the U. S. Intelligence Board (USIB).

b. COSATI.

c. A Joint Working Group composed of State, AID, USIA and Arms Control Disarmament Agency (ACDA) is examining computer equipment needs looking toward a foreign affairs data processing center as proposed by the General Accounting Office.

d. Departments concerned with foreign trade policy are continuing to contribute to the maintenance of the data base managed by the Office of the President's Special Trade Representative (STR) which now includes trade and tariff statistics for about ten major trading countries.

e. In addition, State is following several projects in universities and research institutions, some of them government-supported, concerned with model-building and simulation in foreign affairs.

Country Program Model. An experimental (classified) policy study for a selected country is being sponsored by the Senior Interdepartmental Group to serve as a possible model incorporating program budgeting type objectives and program data. DOD systems analysts and computers are used.

Scientific Information and Analysis. International Scientific and Technological Affairs, with the cooperation of ACDA, is studying the utility of the Arms Control Technical Information and Analysis Center (ACTIAC) contract with Battelle Memorial Institute as a model adaptable to its needs.

Economic Analysis. In addition to the joint support of the STR file mentioned above, the Bureau of Economic Affairs in 1968 undertook a one-time analysis of U. S. trade with developing countries, reflecting the results of the Kennedy Round tariff negotiations.

AGENCY FOR INTERNATIONAL DEVELOPMENT

As in previous years, A.I.D. has continued in 1968 to disseminate technical and scientific information primarily through four types of channels: (1) approximately 1,600 projects and activities in the less developed countries each involving an international flow of information and people; (2) several programs specifically focused on dissemination of information (such as A.I.D.'s book programs, Technology Inquiry Service, operated by VITA (Volunteers for International Technical Assistance, Inc.), support of translation centers overseas, etc.); (3) participation in the information activities of several international organizations, notably OECD, CENTO, OAS and the UN Secretariat; and (4) support of related activities by other Agencies of the U. S. Government and by U. S. contractors. Those include training and information programs of USDA, FAA, IRS, the National Library of Medicine, and many other government bureaus as well as major research, teaching, and publishing activities at about 70 universities.

In its efforts to improve its information-handling, A.I.D. has continued to give priority to information about its own activities. To meet Agency needs for rapid retrieval of current information on all aspects of project assistance activities, a new Project Analysis Information System (PAIS) has been developed. This system makes use of two types of storage facilities: (a) automated files for project data; and (b) centralized manual document files for project documents. A new form, the Activity Characteristics Sheet (ACS), has been developed to provide an index to the PAIS. This form, a questionnaire which is being completed at present for each project, covers the most important substantive aspects of assistance projects (purpose, program emphasis areas, geographic impact, institutional aspects, related undertakings by host country, etc.). The data collected through the ACS will be computerized and used in conjunction with fiscal data from other sources to respond rapidly and accurately to various types of queries from A.I.D. offices and outside groups. This system will also provide a useful tool for drawing on A.I.D. experience, analyzing A.I.D. programs, training and briefing of Agency personnel, and identifying research needs.

Another significant step taken in 1968 was the first compilation and publication of a listing of "A.I.D. Sources of Economic, Technical and Financial Information", as a reference tool for A.I.D. personnel and for organizations in the developing countries.

Two recent developments will directly affect information management in the Agency: (1) The new section 621(a) of the Foreign Assistance Act. It states specifically that "The Congress believes that. . .foreign aid funds could be utilized more effectively by the application of advanced management decision making information and analysis techniques, such as systems analysis, automatic data processing, benefit-cost studies, and information retrieval." It also requires the Agency to "establish a management system" within a Planned Programing and Budget System (PPBS) framework. (2) The establishment of a new top-level Systems Development and Data Processing Committee to coordinate all information management efforts.

Latin American Economic and Social Data. The Bureau for Latin America (A.I.D.), in collaboration with A.I.D.'s Data Systems Office and its Statistics and Reports Division, is establishing a computerized data bank (18 countries) covering such subjects as economic and social indicators, government finance, agriculture, education, health and population. Trends, ratios, percentage distributions and other calculations will be readily available from the system. When fully operative, this system will be integrated with the State Department's "Current Economic Reporting Program" (CERP), which services many U. S. Government Departments and Agencies.

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration (FHWA)

The Federal Highway Administration has developed an R&D Information System to aid in the planning, coordination and correlation of ongoing research performed by the FHWA bureaus, particularly the National Highway Safety Bureau and the Bureau of Public Roads. The system will provide information on some 1400 to 1500 current research projects.

The key coordinating factor of the system is a common set of R&D needs or "requirements", a conceptual framework which encompasses the entire spectrum of the highway transportation system, including the vehicle, the user, the highway, and the environment. The multiplicity and diversity of FHWA bureau-level programs, ranging from Federal-aid highways to motor vehicle safety standards, makes it vital to correlate individual bureau-level R&D support activities. By using the common set of requirements, similar bureau-level R&D activities are visibly brought together and, hence can be better coordinated, correlated, and interfaced.

The R&D information will provide matrices showing, by bureau, the individual projects and R&D dollars devoted to each FHWA R&D requirement. A periodical program digest of all current FHWA projects is also planned for publication.

In addition to providing correlation information at the administrator's level, the R&D Information System will provide regular and special reports by unique bureau codes for use by the bureaus. Thus the R&D Information System will satisfy both the R&D correlation needs of FHWA as well as the administrative needs of the bureaus.

As a second phase, the output from the Highway Research Board's Highway Research Service (HRIS) is being incorporated into the FHWA R&D Information System to the extent that correlation of FHWA R&D projects with highway R&D activities performed by external organizations will be possible. It is also planned that the FHWA R&D Information System will be compatible with the proposed COSATI communications network in the Federal Government for the effective interchange of R&D information.

Bureau of Public Roads (BPR)

The World Survey of Current Research and Development on Roads and Road Transport, covering 35 countries and some 3,500 research projects, was published during 1967. This report has helped to broaden the horizon of research workers and to stimulate greater interest in and concern for research and development in many countries throughout the world. It also clearly established the desirability – if not the imperative need – of continuing the study to include all available information. A new survey was undertaken during the year to up-date the information for those countries included in the previous study and to include additional countries not visited during the earlier survey. So far, 35 countries have been resurveyed or up-dated and five countries not included in the earlier study have been surveyed. By the end of the year, it is estimated that approximately 5,000 research projects will have been surveyed or up-dated, which represents the major part of the current research in the world outside of the United States.

The Bureau of Public Roads (BPR) has, with the American Association of State Highway Officials, jointly sponsored the Highway Research Information Service (HRIS) of the Highway Research Board in developing a computerized system for storing and retrieving technical highway research. BPR is supplying HRIS with data on all its on-going research and abstracts of completed studies. Also, it is furnishing HRIS with international road research documents from 40 foreign countries through a contract with the International Road Federation. Reports of "On-going Highway Research and Development Studies" are disseminated annually to those interested in this field in booklet form. Since 1965, approximately 1,300 reports on research findings have been sent to the Clearinghouse for Federal Scientific and Technical Information for announcement and possible sale to the public.

National Highway Safety Bureau (NHSB)

The National Highway Safety Documentation Center of the National Highway Safety Institute was activated during the last quarter of calendar year 1967. Its goals and objectives are to collect, catalog, analyze and announce all scientific and technical information in the subject fields of *vehicle and highway safety.*

A detailed survey was conducted to determine what information existed, broken down into some 60 subject areas, throughout the country. Earlier studies had determined informational needs and the user communities. Sixteen organizations with information collections had been identified. The findings indicated that four organizations had under some form of bibliographic control over 95% of the current (not over 4 years of age) information. Further, there was no common thesaurus or word list which would satisfy the needs of NHSB. The survey indicated that up to 33,000 items existed but over 80% appeared in the open literature.

NHSB has developed its own interim thesaurus and has now contracted for a more sophisticated and refined thesaurus. Its acquisitioning effort during 1968 amounts to 4,000 current items. It is planned to double this effort, as well as to obtain an estimated 30,000 previously identified items during fiscal year 1969.

All these data will be placed under computer control using a real-time system. Terminals will permit on-line subject searches. Plans include selective dissemination of information to the user community.

The Documentation Center not only serves as a traditional information center but is also responsible for preparation of state-of-the-art reports, publication and reproduction, graphic arts, film, brochures and other forms for dissemination of information. A library is maintained using microfiche. Reference material is available in hard copy form as well as microfiche, such as SAE Standards.

Federal Aviation Administration (FAA)

The FAA Research and Technology Resume, Form 1750-1, established in 1966, has been implemented in agency Medical and Super Sonic Transport R&D programs. Consideration is being given to using the form for the agency's Air Traffic Control, Navigation, Aviation Weather and Aircraft Safety R&D programs.

In June, 1968 the FAA ADP information retrieval system became operational. The system uses an IBM 360 to interrogate the information retrieval file to retrieve specific documents for patrons. This change discontinues Termatrex, a semi-mechanized information retrieval tool. During the last five years FAA has produced as a by-product of cataloging and indexing, a paper tape record representing approximately 14,000 technical reports selected for FAA use. These cards are limited in providing efficient access to items by subjects, report numbers, contract numbers, authors, source and date. This data base on paper tape has been converted to magnetic tape to create an information retrieval data base.

To improve the utilization of technical information required by FAA libraries, a project was established to prepare a list of serials received by all FAA organizations. Initial results of this effort is the preparation of an FAA Union List of Serials to holdings in all FAA libraries. A computer-produced printout of these serials is in use by FAA libraries and a printed version of the list will be issued.

Contact has been made with the Clearinghouse for Scientific and Technical Information to obtain magnetic tapes containing technical report literature for processing by FAA. A magnetic tape representing one issue of the U. S. Government Research and Development Reports is being reviewed to determine its applicability in the FAA information retrieval system.

United States Coast Guard

During 1968, the United States Coast Guard completed a study on a proposed Office of Research and Development, which would be the focal point for Coast Guard Research and Development information efforts. Existing research and development efforts in several offices have already been consolidated. Information systems for the new office are still evolving. Compatibility with other Federal agency systems is planned.

GENERAL SERVICES ADMINISTRATION

The past year saw considerable progress in the development of a computer program for the production of finding aids for retrieving information from archives and private papers of Government officials. The project, which is supported by a grant from the Council on Library Resources, Inc., is being carried out in cooperation with nine other institutions, both Government and private. A series of conferences was initiated to direct attention to archival holdings and problems. The first of these conferences was held coincidentally with the opening of the Center for Polar Archives in the National Archives, and was devoted to records relating to Arctic and Antarctic exploration by the United States. The second dealt with the National Archives and statistical research. A third, which attracted world-wide interest, concerned captured German and realted records of World War II. Sales of microfilm publications, primarily to research institutions and libraries, were 25 percent higher than last year. Since 1940, the equivalent of 5 million documentary pages of the most valuable holdings of our Nation has been distributed.

In cooperation with the Bureau of the Budget, GSA developed the ADP Management Information System (MIS) for ADP improvements within and among agencies. From data agencies submitted on computer tape, GSA prepared 35 MIS reports consisting of detailed information on inventories, utilization, acquisition history, cost, and manpower. Full-time utilization of Government ADP equipment remained a primary GSA target. Two more ADP Sharing Exchanges were organized, bringing their total number to 20. Their mission is to help agencies locate unused time on Government equipment instead of turning to commercial sources. Sharing arrangments, largely effected through Exchanges, enabled agencies to avoid $43.8 million in costs in 1968. One agreement avoided costs of $10,000 a week on a continuing basis. The advent of the $10 million ADP revolving fund established by Congress strengthened and expanded GSA's capacity for realizing economies. The fund's first three major financings were the purchase of three computer systems which agencies had leased from manufacturers. The equipment, costing about $1.9 million, will save rentals amounting to $1.8 million over its planned retention life––three years for a system jointly for NASA and the Interior Department and five years on the other two for Commerce and Labor Departments. The greatly enhanced quality of computer magnetic tape procured by the Government was one of the most rewarding achievements of the year. From it flowed annual purchase price savings calculated at $8.6 million a year––the visible value, in effect, in stimulating price competition among tape suppliers. The savings, however, fall short of portraying the full value of the advance. The superior value of tape conforming to specification is notable in a greatly lessened potential for errors, reducing computer time that agencies lose in making corrections because of poor quality tape.

LIBRARY OF CONGRESS

Under Title II-C of the Higher Education Act of 1965, the Library was empowered to collect on a world-wide basis all currently published significant publications of research interest and to provide cataloging information on these publications to the library and information community as rapidly as possible. With appropriations totaling $8,300,000 for the slightly more than two years of operation, the Library has taken steps to establish acquisitions and cataloging centers around the world, and it plans to expand the system and the service as speedily as funding will allow. At the end of 1968, the publications of 15 countries (Austria, Belgium, Brazil, Denmark, Finland, France, Germany, Great Britain, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, and Yugoslavia) were covered by 10 overseas LC cataloging centers using "shared cataloging" techniques in cooperation with the national bibliographies of the country of origin. Cataloging information form the national bibliographies of 5 additional countries (Australia, Canada, New Zealand, South Africa, and the U.S.S.R.) is being received directly at LC. A regional acquisitions office in Nairobi was acquiring the publications of 10 East African countries.

Under Public Law 83-480 the Library of Congress is authorized to establish acquisitions programs in countries where excess currencies have accrued to the U. S. Government through the sale of surplus agricultural commodities. Under this program, multiple copies of research publications are being acquired from seven countries (Ceylon, India, Israel, Nepal, Pakistan, the United Arab Republic, and Yugoslavia) for distribution to the Library of Congress and over 40 other major research libraries in the United States.

The MARC II Format, a communications format for bibliographic data, was designed by the Information Systems Office in Fiscal 1968 in the light of experience gained from the earlier MARC Pilot Project. Magnetic tapes bearing current cataloging data in the new format will be distributed on a subscription basis beginning in Fiscal 1969. Study of various Library operations to determine methods of applying automatic data processing to them continues. Automation of Order Division and Central Charge File operations, both components of the larger Central Bibliographic system, is scheduled to begin in Fiscal 1969.

The Library of Congress has continued its cooperative program with the other two national libraries––the National Agricultural Library and the National Library of Medicine––under the direction of the U. S. National Libraries Task Force, on which representatives from each of the three national libraries serve. The Task Force has concentrated on the need for standardization and compatibility in systems components. Problem areas have been identified and working groups have been organized to make detailed studies of acquisitions, bibliographic codes, character sets, descriptive cataloging, generalized output, machine-readable format, name entry and authority file, serials, subject headings, and systems design. An advisory committee composed of representatives from major professional societies assists the Task Force in communicating and coordinating its efforts with related activities within the library community. Following recommendations by the Task Force, directors of the three national libraries have jointly adopted: (1) the MARC II format for the communication of bibliographic information in machine-readable form and the set of data elements defined for monographs within the MARC structure, (2) standard practices for descriptive cataloging, and (3) a standard form for representing calendar dates in the data processing systems of the three libraries. The latter should prove useful in data interchange among other Federal agencies. The Task Force has also developed a standard language code and standard character sets for roman alphabets and romanized non-roman alphabets.

Priority attention is being given to the National Serials Data Program, a major goal of this cooperative library program, which aims at the development of a "national data bank of machine-readable information relating to the location of hundreds of thousands of serial titles held by American research libraries."

During 1968, the National Referral Center for Science and Technology was merged with the Science and Technology Division in an effort to provide more effective and efficient services to the scientific community, other government agencies, and the public. Through improved control techniques, it has been possible to handle a considerably increased volume of reference and referral requests within a five-day turn-around time. Publications of the consolidated division made available to the public through various channels included the following: *Air Force Scientific Research Bibliography.* Vol. V; *Snow, Ice and Permafrost Bibliography,* Vol. XXII; *Aerospace Medicine and Biology: A Continuing Bibliography,* NASA SP-7011; *Wilbur and Orville Wright: A Bibliography; Nuclear Science in Mainland China: A Selected Bibliography.*

Automation played an important role in the Division's activities in 1968. The MARC II bibliographic format was applied to the production, on an experimental basis, of a book catalog of the Science Reading Room collections which includes books, serials, and technical reports, both current and retrospective, in a wide variety of languages. Similarly, the MARC II format was adapted, with notable success, to the compilation on a monthly cumulative basis of a bibliography of current literature on cold regions science and technology, produced for the Cold Regions Research and Engineering Laboratory (CRREL), U. S. Army Materiel Command. This so-called CRREL bibliographic system is being adopted by other Library activities, including the Legislative Reference Service and possibly the

General Reference and Bibliography Division. Automation of the National Referral Center's register of information resources in the United States continued during the year. The most significant development was the adoption of the Department of Defense *Thesaurus of Engineering and Scientific Terms* (TEST) as the basis for the subject indexing of the Center's data. The same *Thesaurus* is also used to index the cold regions bibliography produced for CRREL. COSATI subject field and group indicators are also used, and thus afford additional approaches for retrieval of the data stored.

The principal developments in the program of the Aerospace Technology Division (ATD) during the past fiscal year may be summarized as follows:

The Cyrillic Bibliographic Project became a part of ATD, the main purpose of this organizational change being to eliminate a considerable duplication of effort as between the work involved in publishing the *Monthly Index of Russian Accessions* and a parallel effort carried on in ATD's Machine Bibliography Unit.

Also in connection with the Cyrillic Bibliographic Project, work was completed on a definitive list of Soviet serials and arrangements were completed for publication of this list under the title *Half a Century of Soviet Serial Publications, 1917–1967* which will appear in January 1969. A third significant development associated with this Project was a major change in the subject indexing used in the MIRA.

Since the introduction of a subject index to the *Monthly Index of Russian Accessions* in 1952, a system of pinpointed subject headings used in the catalogs of the Library of Congress had been applied. The Project was aware that this system had certain serious drawbacks, namely, the fact that a user interested in a certain subject field had to check numerous related subject headings. For this reason it was proposed to introduce a new system based on the Universal Decimal Classification, and a questionnaire was included in each copy of the January 1968 issue of MIRA. Ninety-six replies were received, of which all but 3 favored the proposed system. Consequently, the new system was introduced in the April 1968 issue (Vol. – 21, No. 1).

In the lexicographic program, very substantial progress was made in converting the Russian Master Dictionary entries to the so-called SYSTRAN approach to machine-aided translation. The "Human Dictionary Program" saw the publication of a *Glossary of Soviet Abbreviations and Acronyms.* The 816-page volume, containing 23,600 entries and a bibliography of the basic source materials, was put on sale by GPO on February 8, 1968. The Library of Congress Information Office gave it wide publicity, sending a descriptive press release and review copies of the glossary to 29 library and linguistic journals throughout the United States and the western world. During Fiscal 1968 the Chinese Lexicographic Program which was initiated in the Lexicography and Terminology Section in FY 66 on a pilot project basis, became a regular activity of the Chinese Lexicography Unit of the L & T Section. The Unit was formally established in August 1967. With formal organizational arrangements completed and the technical lexicographic formats established for Chinese-to-English dictionary production, collection and processing of scientific and technical terminology proceeded toward the objective of publication of the first edition of the "ATD Chinese-English Polytechnical Dictionary."

In terms of its main function of exploiting foreign scientific and technical publications, the Division produced over 32,000 abstracts and over 200 major studies.

The Science Policy Research Division of the Legislative Reference Service has now a staff of 23 persons with a broad range of professional competence in science and technology and information science. Through its expertise in information systems it has assisted both the Congress and the Library in planning for the adoption of automated procedures in the overall work of the Legislative Reference Service and of the Congress. Among the reports prepared during 1968 were: A Report on Federal Arctic Research; The International Biological Program; Availability, Utilization, and Salvage of Industrial Materials; Science, Technology, and Public Policy during the Ninetieth Congress, First Session; The Prospects for Technology Transfer; A National Program of Institutional Grants for Science and Science Education; Managing the Environment; Technology Assessment Seminar; and Automatic Data Processing and the Small Businessman. A computer-supported system featuring typewriter terminals has been used in the indexing, storage, editing, and final preparation of numerous Division reports.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Development of software was completed for an agency-wide information retrieval system using on-line remote consoles (NASA/RECON), and initial installation of equipment was begun for first-phase implementation of the system at NASA Headquarters, the NASA Scientific and Technical Information Facility, and selected field installations. The information base for the system—–which permits both scientists and librarians to conduct direct search dialogs with a central, time-shared computer—–has been expanded to include management and administrative elements, in addition to the nearly 500,000 document citations in the NASA scientific and technical document collection.

Agreements were reached between NASA and the Clearinghouse for Federal Scientific and Technical Information for the experimental application of user charges for "hard" (paper) copies of unclassified, unlimited documents supplied on secondary distribution (i.e., in response to specific requests). Primary distribution of NASA publications, distribution of microfiche, and distribution of classified or limited documents will not be affected by the cooperative arrangement, which is subject to review in June, 1969.

Upon completion of limited-scale operational testing of the NASA/SCAN system (*S*elected *C*urrent *A*erospace *N*otices), this topic-based current awareness service was expanded to include all interested NASA contractors and other government agencies. Experiments with variant distribution mechanisms, in cooperation with using organizations and with the American Institute of Aeronautics, are continuing to determine optimum balance between central and decentralized procedures.

NASA's foreign-exchange partners in western Europe were canvassed to arrange for coordination and reprocessing of their document contributions through the European Space Research Organization (ESRO). This step reinforces the NASA/ESRO information-exchange agreement itself, and also strengthens the international linkages for scientific and technical communication throughout the ESRO community.

The first full year of indexing under the *NASA Thesaurus* was completed with significant success. An updated revision of this indexing authority for aerospace science and technology, which was published as a preliminary edition in 1967, is under way.

NATIONAL SCIENCE FOUNDATION

Introduction

This is the tenth anniversary of the Office of Science Information Service (OSIS). OSIS was established in recognition of the importance of information to the health of the nation's science and engineering efforts and the need to help scientists and engineers cope with the rising tide of information.

In FY 1968 the Foundation continued to support three major areas of emphasis in science information: (1) *Discipline-Oriented Information Activities*—support for present information activities and development of comprehensive information systems within the major scientific disciplines; (2) *Federal Science Information Activities*—support for and coordination of science information functions of interest and benefit to Federal agencies; (3) *General Science Information Activities*—support of activities, services, and information science research which serve more than a single scientific discipline or group.

In FY 1968, the Foundation awarded 154 grants and contracts, amounting to $14.4 million, in support of scientific information activities. These awards were distributed among 32 scientific societies, 26 academic institutions, 8 research institutes, 8 commercial organizations, 4 museums, 5 Federal agencies, 7 foreign organizations (for translations and other science information projects) and to one individual.

Progress. During FY 1968 the Foundation's Office of Science Information Service obligated $10.3 million for discipline-oriented information activities, $2.2 million for Federal science information activities, and $1.9 million for general science information activities.

Discipline-Oriented Science Information Activities. The principal objective of the support program for discipline-oriented information systems is the development and exploitation of a computer-based comprehensive science information system which is user-oriented for each major scientific discipline. Ultimately, the system developed for each discipline will be interconnected with other discipline systems so that science information may be shared. In addition, funds now provided by the Foundation permit planning in each developing system for eventual access to large files of machine-readable information and data.

During FY 1968 the Foundation provided support for the planning or development of computer-based information systems for chemistry, physics, linguistics, psychology, earth sciences, engineering, mathematics, biology, and the earth sciences. A summary of progress in chemistry and physics during FY 1968 is presented below.

Chemistry received more support than the other disciplines because the system for chemistry is more advanced than the other systems. Development of the American Chemical Society's (ACS) computer-based information system in chemistry included three major activities: (1) The establishment of two experimental information centers to introduce more broadly the concepts of computer produced information and services to a wider audience; (2) the initiation of unified publication procedures (for both full length articles as well as abstracts) to capitalize on one preparation for input to the total systems; and (3) the successful completion of experimental cooperative projects with other government agency information systems as well as the initiation of other cooperative activities. At the same time, discussions were initiated with OECD countries of Western Europe for pooling of efforts in the acquisition and processing of chemical information.

Build up of the computer store of the Chemical Abstracts Service Chemical Compound Registry continued. The Registry now contains about 900,000 chemical compound structures. Research and development continued at Chemical Abstracts Service on special problems such as processing information on polymers, mixtures, and other substances by computer. Display techniques for computer output of chemical structures were investigated at the University of Pennsylvania. Computerized comparisons of four kinds of spectral data to identify new compounds was demonstrated by the Illinois Institute of Technology Research Institute. Graph theory applications to chemical structure analysis by computer were examined at the University of Michigan. The university projects mentioned are experimental.

Advanced research on translation of chemical names into connection tables (an inventory of chemical structures based on atomic bonding characteristics) by computer was undertaken. Connection table techniques have reached the point where an estimated 65 percent of the compounds can be registered by this process.

The ACS established a Planning Office to develop comprehensive plans for the total chemical information system. The objectives are to publish by computer all 20 ACS primary journals in 1971 after the intermediate goals of a completely computer-based publication system for Chemical Abstracts is achieved in 1970.

Physics was second in terms of financial support provided. This again reflects the state of sophistication of the system.

The American Institute of Physics (AIP), continued to develop a program for a National Physics Information System. The development program includes both traditional methods of the communication of physics knowledge and "creative simplifications," such as condensations, indexes, reviews, and compilations of evaluated data. AIP also assumed the responsibility for maintaining a machine readable bibliographical file, developed with NSF support, at the Massachusetts Institute of Technology as part of a mechanized reference retrieval system. AIP is continuing its development of an indexing system for physics and, in cooperation with other groups, is conducting a series of indexing and searching experiments. Stanford University continued development of an operational on-line reference-retrieval system for faculty scientists as well as those at the Stanford Linear Accelerator Center. This project also includes a study of the information-seeking behavior of physicists in this setting.

Federal Science Information Activities. During FY 1968, the Foundation provided financial support to the Smithsonian Institution for the operation of the Science Information Exchange. NSF also continued support to the Committee on Scientific and Technical Communications (SATCOM) of the National Academy of Sciences-National Academy of Engineering. In addition, other Academy groups such as the Council on Biological Sciences Information received support.

A Joint Office of Science and Technology/SATCOM *ad hoc* Task Group on Interchange of Scientific and Technical Information in Machine Language (ISTIM) received support from NSF through the National Bureau of Standards. The firm of Peat, Marwick, Livingston & Company, under an NSF contract monitored by Office of Science and Technology, began a study of Government-wide research and development project-reporting.

Cooperative financing by NSF, the National Library of Medicine, and the Office of Education permitted the University of Maryland to commence a study of requirements, educational preparation, and utilization of manpower in Library and information science work.

A National Serials Data Program, located at the Library of Congress (and sponsored by the three national libraries) was partially supported by the Foundation through the Joint Committee on the Union List of Serials, Inc.

General Science Information Activities. These activities include a wide variety of science information programs whose end products serve the needs of more than one scientific or technical field.

International Information Activities. In FY 1968, the Foundation continued to support U. S. participation in the science information activities of international organizations and meetings, international travel for science information meetings, the exchange of personnel, and the provision of reference and information aids. In addition, the heightened international interest in scientific and technical information required the financial and staff support by the Foundation in the activities of the International Council of Scientific Unions Abstracting Board, the Organization for Economic Cooperation and Development, the International Federation for Documentation, and others.

Special Foreign Currency Science Information Program. NSF continued to administer this Program for all Federal agencies for translations and other products. Contracts have been negotiated in nine countries: Israel, Poland, Yugoslavia, India, Tunisia, Pakistan, Ceylon, and Burma. A contract in the United Arab Republic has been temporarily suspended. Obligations and expenditures in support of this activity were about the same as the preceding years, about $1,000,000. These funds have been insufficient to adequately serve the needs of the agencies. Therefore, the agencies augmented the Foundation's appropriations by transfer of funds authorized by the Congress for obligation under PL 480.

The products of the foreign translation program are predominantly translations but include also the preparation of abstracts and digests and the compilation of annotated bibliographies.

Specific demonstration of the value to the United States of the foreign currency translation activities is provided by the following illustration: Crop hail insurance figures indicate that our agriculture experiences losses in excess of $200,000,000-$300,000,000 per year from hail damage, with a probable equal amount of damage to urban property. A working committee of U. S. scientists were preparing a proposed National Hail Suppression Research Program for NSF at the request of the Federal Council for Science and Technology. Soviet scientists were pursuing similar research. In 1966, the Russian scientist, G. K. Sulakvelidze, issued a complete report of his hailstorm model and described the results of field tests for suppressing hail in the Caucasus in 1965. The report was in Russian so OSIS obtained a translation from the Israel Program for Scientific Translations. Upon receipt of the translation, it became apparent to the committee that a blueprint was now available for a specific test in the field, and that much more would be learned by focusing all of the available manpower and funds on a single objective than in dividing up the effort into separate research problems which would have to be reassembled later with somewhat uncertain results. The previously conceived broad program was then shelved and the committee recommended one specific test of the Russian hail model at a specific location with a duration of five years. If the Russian model proves to be valid for U. S. hailstorms, it is estimated that five years of exploratory research at a cost of $20 million will have been saved.

Domestic Translation Program. The domestic translation program was continued also. This program is implemented through grants to scientific societies and academic institutions in the United States and provides for the translation of primary foreign scientific journals on a current basis. Thirty-one journals are presently receiving support, of which four were recently started.

Research Centers in Information Science. The Georgia Institute of Technology and the Ohio State University continued, with Foundation assistance, to develop a research center in information science. At Ohio State, six information science research areas have been established and a Distinguished Lecture Series in the information sciences was also supported.

Research Libraries. New methods for efficient text representation, file searching, and retrieval, developed at Lehigh University, received Foundation support for continued development as a prototype system. The project will (1) permit operational tests of the methods of text representation and file searching; (2) serve as a research tool in information retrieval; and (3) be used to support the instructional functions of the University.

A framework for collaboration on library systems development will link the work being done at Columbia University, the University of Chicago, and Stanford University. Each is engaged in a project for the design and integration of computer-based library sub-systems for traditional processing functions. The Collaborative Program in Library System Development, funded by the Foundation, will permit coordination of this work among the three libraries.

NSF support helped initiate a long-range science improvement program for the Texas Gold Coast at Rice University. The objective is to develop a centralized bibliographic reference and intra-network location and transfer service for 18 academic institutions in the area.

Additional information concerning the activities mentioned in this report may be obtained from the "Annual Report – Office of Science Information Service – Fiscal Year 1968" and from the Annual Report of the National Science Foundation for 1968.

SMITHSONIAN INSTITUTION

The Science Information Exchange (SIE) operates under charter and contract with the National Science Foundation. This registry of research-in-progress furnished information to research administrators of Federal agencies and to research scientists throughout the scientific community. Its growth in both acquisition and output services has continued throughout the years, especially in broad problem areas, such as water resources research, urban research and other multidisciplinary fields. The Exchange's major accomplishments during the year included the development of a new data bank system and the preparation of unique computer programs for semi-automatic indexing and catalog preparation.

Provisions for input to the Exchange via computer tape and a tape interchange capability have both been developed.

The International Exchange Service, established in 1849, continued its international service of expediting the exchange of current scientific literature among educational institutes, libraries, scientific societies, and individuals.

The Information Systems Division was established since the preparation of the last progress report. This office represents the central office for many information programs scattered throughout the various bureaus of Smithsonian. Among the many programs currently under way through the Division are the Museum of Natural History program for storage and retrieval of biological and geological data being carried out under a grant by the Office of Education, HEW, and the development of Cluster Analysis Programs which permit the computer to determine a "measure of similarity" in the handling of information of groups of biological specimens. Data processing techniques are also being designed for the development of catalogs of paintings in the National Portrait Gallery.

Recent accomplishments by the Smithsonian Astrophysical Observatory (SAO) in Cambridge include the development of new software packages for interconnecting computer systems via high-speed and voice grade telephone lines. The programs, as developed, allow efficient communication between machines developed by different manufacturers. SAO is currently working on a program of literal algebra on the computer, particularly useful in the verification of extremely long mathematical expressions necessary to expand research efforts of satellite tracking research. SAO makes available to other Government agencies in the area the ability to use excess time on an on-call basis through the GSA office in Boston. SAO is also responsible for the recently created center for the study of short-lived natural phenomena and coordinates the response of the scientific community to these phenomena.

The Smithsonian Oceanographic Sorting Center receives bulk oceanographic collections from many sources and sorts them into specialty groups for dissemination and for scientific study by research specialists. Established in December 1962, this activity has rapidly developed into a central source for oceanographic materials and information.

VETERANS ADMINISTRATION

The Chief Medical Director appointed a Library Automation Advisory Committee for the Veterans Administration Department of Medicine and Surgery. This Committee's primary responsibility is to make recommendations relating to the most economical and efficient relationships between the VA network of library services and other scientific and technical information systems such as MARC and MEDLARS.

Within the VA, library services automation is a subsystem of the Total Information Processing System (TIPS). The VA network for information control and transfer by the VA hospital in support of research, education, and clinical programs at VA hospitals can be represented by a pyramid with the hospital medical library at the apex linked to the legal and research report subsystems. Backup is provided locally, regionally, and nationally by switching to other resources at these levels. The computer-based book cataloging for the VA library network was demonstrated at a conference of Chief Librarians in November 1968.

The Medical Research Information System was implemented during 1968. Data was received from the approximately 3000 investigators in the medical research program of the Department of Medicine and Surgery. The system provides information concerning the specialty training of each investigator and his research activities classified in categories including the body system investigated, the disease under study and the investigative discipline used in the research. The system provides for recording of data for automatic key punching and the information is processed using the IBM 1130 digital computer. Initial experience with this system shows it to be of great value in providing a basis for program evaluation and development.

FEDERAL LIBRARY COMMITTEE

In fiscal 1968, the Librarian of Congress requested funds for fiscal 1969 to place the Federal Library Committee (FLC) Secretariat, previously supported by funds from the Council on Library Resources, Inc., on a continuing basis; shortly after the close of fiscal 1968, when funds for fiscal 1969, the Librarian established two positions for this activity.

A research program resulting directly from project proposals made by the FLC was undertaken through grants from the U. S. Office of Education. Compilation of *Guide to Laws and Regulations on Federal Libraries* was completed for publication in the fall of 1968, and the U. S. Office of Education published the committee's *Surveys of Special Libraries Serving the Federal Government. Procurement of Library Materials in the Federal Government* was in press.

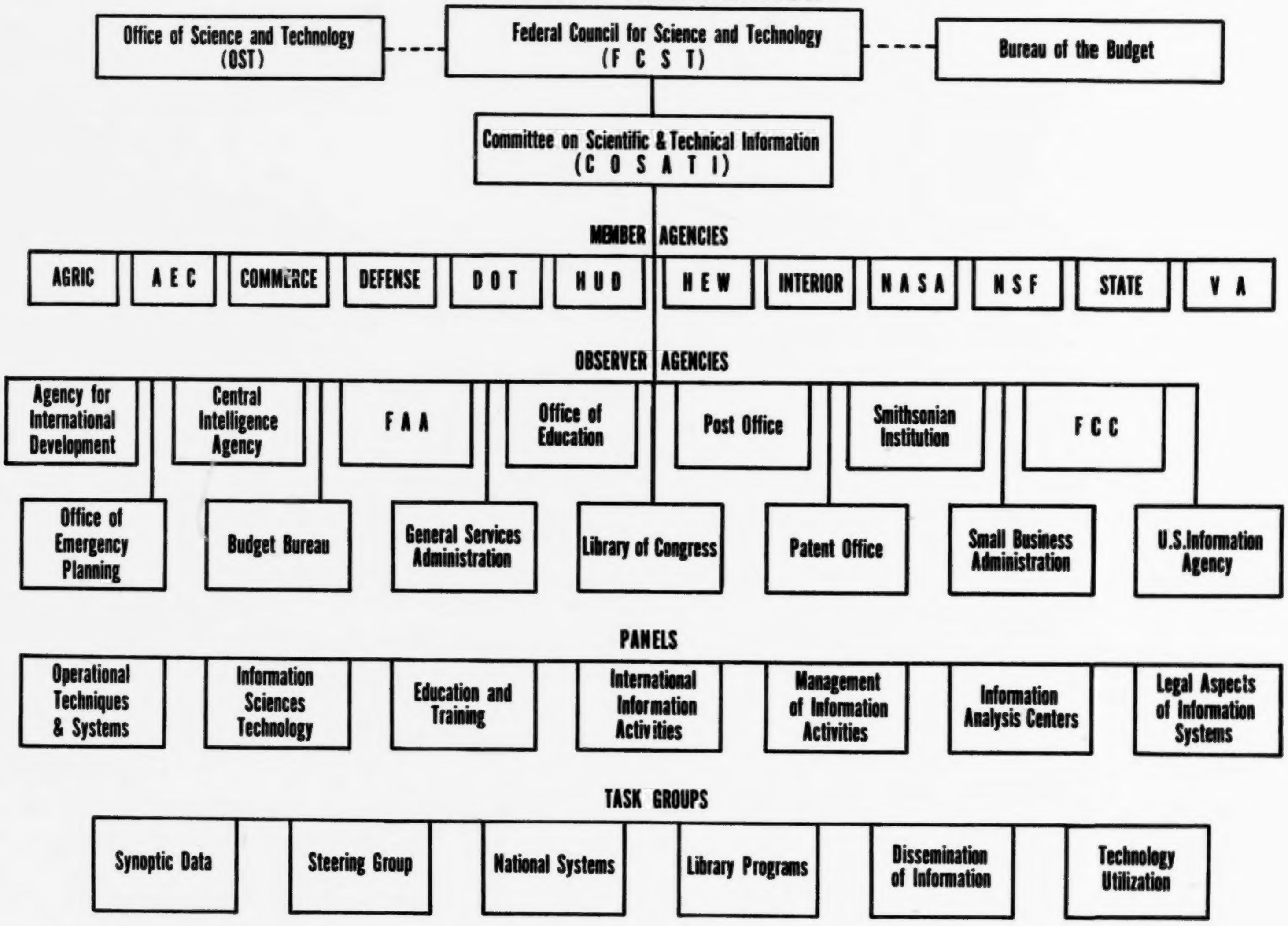
The work of the committee was accomplished during the year through nine task forces and involved more than 100 Federal librarians. These task forces developed and proposed research projects on Federal library resources, the status of automation in Federal libraries, educational needs of employees in Federal library and information centers, and the current relationship between Federal libraries and information centers.

In December, the Committee adopted the following resolution, drafted by its Task Force on Automation, concerning the MARC II format:

"The Federal Library Committee, in view of the rapid developments in the field of automating the processing of bibliographic information, recommends that all Federal libraries now using or contemplating electronic data processing in their operations accept the MARC II format as the basis for communicating bibliographic information.

APPENDIX A

COSATI ORGANIZATION


Office of Science and Technology (OST)
Federal Council for Science and Technology (F C S T)
Bureau of the Budget
Committee on Scientific & Technical Information (C O S A T I)
MEMBER AGENCIES
AGRIC
A E C
COMMERCE
DEFENSE
D O T
H U D
H E W
INTERIOR
N A S A
N S F
STATE
V A
OBSERVER AGENCIES
Agency for International Development
Central Intelligence Agency
F A A
Office of Education
Post Office
Smithsonian Institution
F C C
Office of Emergency Planning
Budget Bureau
General Services Administration
Library of Congress
Patent Office
Small Business Administration
U.S.Information Agency
PANELS
Operational Techniques & Systems
Information Sciences Technology
Education and Training
International Information Activities
Management of Information Activities
Information Analysis Centers
Legal Aspects of Information Systems
TASK GROUPS
Synoptic Data
Steering Group
National Systems
Library Programs
Dissemination of Information
Technology Utilization

APPENDIX B

FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY MEMBERSHIP

(December 31, 1968)

Dr. Donald F. Hornig (*Chairman*)	Special Assistant to the President for Science and Technology
	Members
Dr. Ned D. Bayley	Department of Agriculture
Dr. John S. Foster, Jr.	Department of Defense
Dr. Leland J. Haworth	National Science Foundation
Dr. John F. Kincaid	Department of Commerce
Dr. Philip R. Lee	Department of Health, Education and Welfare
Mr. Frank W. Lehan	Department of Transportation
Dr. Thomas O. Paine (*Acting*)	National Aeronautics and Space Administration
Mr. Herman Pollack	Department of State
Mr. Thomas F. Rogers	Department of Housing and Urban Development
Dr. Milner B. Schaefer	Department of the Interior
Dr. Glenn T. Seaborg	Atomic Energy Commission

Observers

Dr. Thomas C. Chalmers	Veterans Administration
Dr. Robert Levine	Office of Economic Opportunity
Mr. Saul Nelson	Council of Economic Advisers
Dr. S. Dillon Ripley	Smithsonian Institution
Dr. Herbert Scoville, Jr.	Arms Control and Disarmament Agency
Dr. Ralph G. H. Siu	Department of Justice
Mr. John D. Young	Bureau of the Budget

Executive Secretary

Dr. Charles V. Kidd	Office of Science and Technology

APPENDIX C

FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY COMMITTEE ON SCIENTIFIC AND TECHNICAL INFORMATION

(January 9, 1969)

Colonel Andrew A. Aines, USA(Ret.)(*Chairman*)	Office of Science and Technology
	Members
Dr. Burton W. Adkinson	National Science Foundation
Mr. Edward J. Brunenkant	Atomic Energy Commission
Mr. Walter C. Christensen	Office of Technical Information
Dr. Martin M. Cummings	National Library of Medicine
Mr. Melvin S. Day	National Aeronautics and Space Administration
Dr. H. Elston Hooper	Veterans Administration
Dr. Eugene G. Kovach	Department of State
Mr. John Sherrod	Department of Agriculture
Dr. Richard Morrison	Department of Transportation
Mr. Philip Reily	Department of Commerce
Dr. William Thurston	Department of the Interior
Mr. Bernard Urban	Department of Housing and Urban Development
	Observers
Mr. Artel Ricks	National Archives and Records Services (GSA)
Mr. W. Buril Barclay	Federal Aviation Administration
Dr. Lee G. Burchinal	Department of Health, Education and Welfare
Dr. Sidney R. Galler	Smithsonian Institution
Mr. David Mayer	Department of State
Mr. Harold P. Belcher	Post Office Department

Mr. Simon Bourgin	U.S. Information Agency
Norman D. Schwartz, Esq.	Federal Communications Commission
Mr. G. W. Seymour	Small Business Administration
Mr. Richard A. Spencer, Jr.	U.S. Patent Office
Dr. Leo Warren Sweeney	Central Intelligence Agency
Mr. Robert Howard	Bureau of the Budget
	Liaison
Mr. John G. Lorenz	Library of Congress

APPENDIX D

FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY PANELS AND TASK GROUPS

Chairman	*Executive Secretary*
Panel on Operational Techniques and Systems	
Mr. Norman Cottrell Department of Commerce	
Panel on Information Sciences Technology	
Dr. Ruth M. Davis National Library of Medicine	Lt. Col. Florence B. Casey Department of the Air Force
Panel on Education and Training	
Dr. Lee G. Burchinal Department of Health, Education and Welfare	Mr. F. Kurt Cylke Department of Health, Education and Welfare
Panel on International Information Activities	
Mr. Melvin S. Day National Aeronautics and Space Administration	Mr. Alexander G. Hoshovsky Department of the Air Force
Panel on Management of Information Activities	
Mr. James W. Hodges (*Acting*) Defense Supply Agency	Mr. William S. Hutchinson (*Acting*) Defense Supply Agency
Panel on Information Analysis and Data Centers	
Dr. Edward L. Brady National Bureau of Standards	Dr. Samuel G. Weissberg National Bureau of Standards

Chairman	*Executive Secretary*
Panel on Legal Aspects of Information Systems	
Mr. Edward J. Brunenkant Atomic Energy Commission	Mr. Arthur J. Caron, Jr. Department of Defense
Task Group on National Systems for Scientific and Technical Information	
Colonel Andrew A. Aines, USA(Ret.) Office of Science and Technology	Colonel Andrew A. Aines, USA(Ret.) Office of Science and Technology
Task Group on Dissemination of Information	
Colonel Currie S. Downie Office of Aerospace Research	Mr. Paul S. Feinstein National Aeronautics and Space Administration
Task Group on Technology Utilization	
Dr. Richard L. Lesher (*Acting*) National Aeronautics and Space Administration	Mr. Roy Bivins (*Acting*) National Aeronautics and Space Administration
Task Group on Library Programs	
Mr. John Sherrod Department of Agriculture	
Ad Hoc Task Group on Data	
Dr. James Vette Goddard Space Flight Center	Mr. James A. Fava Goddard Space Flight Center

APPENDIX E

COSATI PUBLICATIONS

Progress of the U.S. Government in Scientific and Technical Communication, 1967. (COSATI annual report for 1967.) January 1969, PB 180 867.

The Role of the Technical Report in Scientific and Technical Communication. December 1968, PB 180 944.

Guidelines to Format Standards for Scientific and Technical Reports Prepared by or for the Federal Government. December 1968, PB 180 600.

A Study of Scientific and Technical Data Activities in the United States. April 1969, Volume I, AD 670 606; Volume II (A&B), AD 670 607; Volume II (C&D) AD 670 608.

A Survey of Five On–Line Retrieval Systems. Released for Publication in May 1969, Ad 686 812.

Selected Mechanized Scientific and Technical Information Systems. April 1968, Superintendent of Documents, U.S. Government Printing Office, (Price $1.50).

Directory of Federally Supported Information Analysis Centers. April 1968, PB 177 050.

Proceedings of the Forum of Federally Supported Information Analysis Centers, November 7–8, 1967. April 1968, PB 177 051.

Progress of the United States Government in Scientific and Technical Communication, 1966. (COSATI annual report for 1966.) October 1967, PB 176 535.

Guidelines for the Development of Information Retrieval Thesauri. Superintendent of Documents, U.S. Government Printing Office, 1 September 1967, (Price 15¢).

The Copyright Law as it Relates to National Information Systems and National Programs. July 1967, PB 175 618.

Exploration of Oral/Information Technical Communications Behavior. 15 March 1967, AD 650 219.

Federal Microfiche Standard – Supplement on the Preparation of Classified Microfiche. 1967, to be available from CFSTI in a new edition of the *Federal Microfiche Standard.* PB 167 630.

A System Study of Abstracting and Indexing in the United States. 16 December 1966, PB 174 249.

Standard for Descriptive Cataloging of Government Scientific and Technical Reports. Revision No. 1. October 1966, PB 173 314, AD 641 092.

Cooperation, Convertibility, and Compatibility Among Information Systems: A Literature Review. 15 June 1966, Superintendent of Documents, U.S. Government Printing Office, (Price $2.00).

Recommendations for National Document Handling Systems in Science and Technology. November 1965, 3 volumes, PB 168 267, AD 624 560.

First Report of Panel 2 – Information Sciences Technology. September 1965, PB 169 686.

Progress of the United States Government in Scientific and Technical Communication, 1965. (COSATI annual report.) 1966, PB 173 510.

COSATI Subject Category List – First Edition. December 1964, AD 612 200.

Summary Progress Report, September 1964. In Study Number IV, *Documentation of Research and Development Results.* Report of the Select Committee on Government Research of the House of Representatives, 88th Congress, 2nd Session. Appendix A, p. 101–106. 20 November 1964, Superintendent of Documents, U.S. Government Printing Office, (Price 60¢).

Proceedings – Second Symposium – Technical Information and the Federal Laboratory. 13–14 April 1964, Superintendent of Documents, U.S. Government Printing Office, (Price 65¢).

Outline Scope of Activities of Committee on Scientific and Technical Information (COSATI). Supplement No. 2, January 1964.

Status Report on Scientific and Technical Information in the Federal Government. 18 June 1963, PB 181 541, AD 411 939.

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